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Ukmarjeva 6, SI – 1000 LJUBLJANA

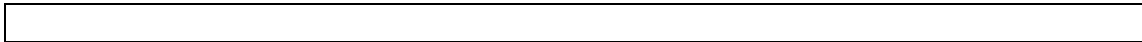


**2<sup>nd</sup> CONFERENCE OF INTERDISCIPLINARY  
RESEARCH ON REAL ESTATE**

**PROCEEDING**



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Institute for real estate studies  
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bojan.grum@evro-pf.si  
Tel: +386(0)41617208

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Chairman of the Scientific Committee,  
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E-mail: darja.kobal@ff.uni-lj.si  
Tel: +386(0)40429636

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Chairman of the Programme Committee,  
Norwegian University of Science and Technology, Norway  
E-mail: alenka.temeljotov-salaj@ntnu.no  
Tel: +47 46445072

**Organized by:**

**INSTITUTE OF REAL ESTATE STUDIES**

Ukmarjeva 6, 1000 Ljubljana  
Tel: +386(1)4214210  
Fax: +386(1)4214215  
e-mail: cirre2016@gmail.com

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Ukmarjeva 6, 1000 Ljubljana

**Edited by**

Bojan Grum  
Alenka Temeljotov Salaj  
and  
Francisco Campuzano Bolarin,  
constructa@siol.net  
tel: +386(1) 4214210

**Programme Committee:**

dr. Alenka Temeljotov Salaj (chairman), dr. Marija Bogataj, dr. Knut Boge,  
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to the KEYNOTE speaker

**prof. SUSANNE BALSLEV NIELSEN**

who opened the 2<sup>nd</sup> CONFERENCE OF INTERDISCIPLINARY RESEARCH ON REAL ESTATE  
with presentation:

**Centre for Real Estate – A new corporate REFM centre in The Capital Region  
of Denmark**

# **Centre for Real Estate – A new corporate REFM centre in The Capital Region of Denmark**

**Susanne Balslev Nielsen  
Mogens Kornbo  
Centre for Real Estate, Capital Region of Denmark**

*Centre for Real Estate - in daily speaking 'CEJ' - is the new centralized real estate centre in the Danish public authority, Capital Region of Denmark. Since 1 January 2017, more than 700 employees have been part of the centre, which has the task of creating, operating and optimizing the buildings owned by the regional authority.*

## **The trusted FM partner**

The Capital Region is responsible of hospitals, mental health services, research, disability services, social services and solving environmental tasks. The building stock is approx. 2 million m<sup>2</sup> with a portfolio consisting of more than 750 single buildings at more than 70 locations. The strategic ambition in CEJ is to become the trusted partner for the regions core businesses and not as de facto the default FM organization. In this article we share our first experiences as inspiration to others who are considering a change process from decentral to central facilities management.

## **The preparations**

The corporate management decided in 2015 that the preparations of a centre for real estate should take place in 2016 and 1 of January 2017 was set as the formal opening day. Mogens Kornbo started as CEO of CEJ the 1. March 2016 and during the spring, summer and fall the contours of CEJ started to settle. The centre should be a real estate and facilities management centre, the hospitals etc. should hand over responsibilities together with employees and budgets and a process was started to prepare and motivate the 720 employees who was about to change their organizational association and become the vast majority of the CEJ employees. An important part of the preparations was the constellation of the organizational structure. It consists of a CEO and deputy with representation in the corporate management, supported by administrative staff and 5 units of

- System and processes
- Planning and building projects
- Operation and technique
- Energy and environment
- Logistics and supply chain

## **The REFM scope**

CEJ's is set out to be a Real Estate FM (REFM) centre that unites ownership, investment and operational optimization in one and the same organization. The responsibilities are in general the physical environment and the technical services related to operation of buildings including: indoor and outdoor building maintenance, technical service, outdoor areas, fire and safety, indoor environment, waste handling parking and environment. In the future we might grow with other FM services, but currently cleaning, catering, receptions, guard etc. is not included in our responsibilities. These FM tasks remain for the time being in the core business organizations. Corporate economy, IKT and HR on are also not the responsibility of CEJ, as the region has other centres with this as their resort.

## **The financial basis**

The economic negotiations were challenging and they still are. Top management at the hospitals accepted or even supported the idea of a central real estate organization, but like in all other situations where resources are limited; there were at times hard negotiations about transfer of budgets from local hospital budgets to CEJ. The actual spending in 2015 was used as reference point for sizing the budget to be transferred. This was a simple principle, but in practice it was still complicated to gain the overview due to variations in the practices around registering costs and the size of the portfolio. The financial basis of CEJ is the budget for maintenance and operation which is assigned by the corporate management. This is approx. €175million/year (1.3 billion DKK/year). Additional activities like larger building projects will be executed by CEJ and funded either by regional or local funding.

## **Establishing a baseline**

This first year is all about getting competent people on board, establish the management team, establish a baseline and start to unite the organization towards the new collective goal. Apart from establishing all the administrative processes within the centre (salaries, IKT systems, communication, paying the right bills etc.), and clarifying the interfaces with all our collaboration partners, CEJ is striving towards a better overview of the building portfolio. A consultancy agency is currently mapping the building portfolio and evaluates its conditions. This will provide us a basis for planning the future investments in building maintenance and the data to feed into the new collective CAFM system (Computer Aided FM system).

## **Preparing handover of new hospitals**

A national investment program implicates an ongoing construction of large hospital building projects across the region (super hospitals in daily speaking). These are built by individual building originations and will at some point be handed over for operation by CEJ. Here is the challenge, as in all FM organizations, to ensure that operational consideration is considered from the start in order to ensure a good starting point for the operating organizations afterwards. The projects are all large and complex buildings for a total budget of €2,150 million (16 billion DKK) which will make other buildings redundant within the coming years.

## **The CEJ strategy**

During the first months of CEJ the leaders have formulated the CEJ strategy. The aim is to be our customers' preferred partner who acts proactively and innovatively regarding the regional facilities. This means that we need to have a good insight into our customers' needs, but also to develop our own organization and to build a common and cross-minded mind-set internally within CEJ. Our 6 strategic pointers:

- Customers in focus,
- more value for the money,
- holistic thinking,
- innovation in everyday life,
- transparency and
- increased professionalization.

In 2017 we are focused on a number of strategic projects as indicated in the strategy map in figure 1.

## The potential

With the many square meters and employees, there are tasks enough to keep the organisation busy. Most importantly, remembering that in CEJ we create an essential part of the foundation for a well-functioning health service, and our work makes sense because it's about life. Establishing a new central real estate centre is not something that happens by itself or in a short period of time. It will be a long learning process where there is a need for the employees at the operational level to ensure the current operation continues while everyone engages in developing CEJ to become the trusted partner we want to be known as.

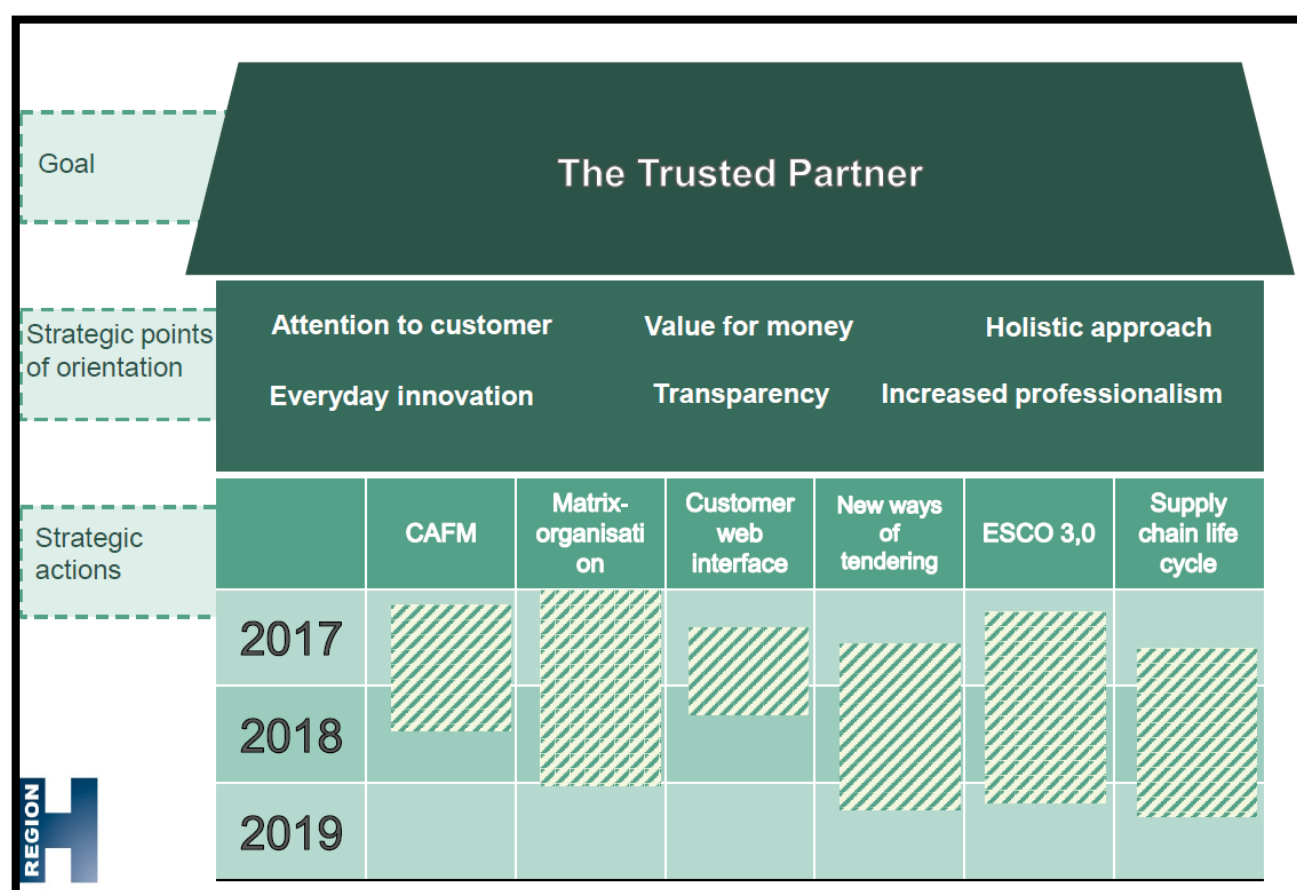


Figure 1: CEJ strategy card

### Facts about the Capital Region of Denmark:

- The region is in total 2,561 km<sup>2</sup> or 6% of the total geographical area of Denmark. It is the most densely populated area with 1.8 m inhabitants.
- The somatic/psychiatry capacity is approx. 4,200 / 1,200 available beds and 830,000/47.00 unique patients per year.
- The region employs 36,000 people primary in the clinical departments and is one of the biggest employers in Denmark.

# **Built environment and health promoting behavior: Meta-analysis in the broader sense**

Darja Kobal Grum  
University of Ljubljana, Slovenia  
E-mail: darja.kobal@ff.uni-lj.si

## **Abstract**

This article explores the effect of built environment on health promoting behaviour. While most health-related research regarding the built environment has focused on physical health there is an emerging body of evidence linking the built environment and mental health. Within a last decade an interesting phenomena called health promoting behaviour became a significant agent in relationship with built environment. Through a meta-analysis in a broader sense, the current study reveals that health promoting behavior is not a single but rather a very complex psychological and community oriented agenda which combines variables from physical health promoting behavior, such as physical activity, nutrition-related behavior, substance disuse, psychological well-being, injury prevention and traffic safety. It discusses some important issues of these phenomena and finally it offers some built environment interventions that could be used to enhance health promoting behavior.

**Keywords:** Built environment, Health promoting behaviour, Physical health, Mental health, Meta-analysis in the broader sense

## **1. Introduction**

Recently, there has been a growing awareness of the impact of the physical or built environment on health (Thornton et al., 2017; Ying, Ning, & Xin, 2015). The term built environment comprises human-made structures and systems that physically define regions, communities, and neighbourhoods, including the buildings, houses, streets, and physical systems that serve them. Broadly defined as separate from the natural environment (air and water quality etc.) and the social environment (social support and social capital), the built environment is often characterized by domains such as access and attributes of amenities including transportation systems, stores, libraries, and sidewalks. The built environment can be conceptualized and measured at specific geographic scales and is frequently defined for research and intervention at multiple levels. According to Zimring, Joseph, Nicoll and Tsepas (2005) these levels can include community or neighbourhood design features (bicycle networks), building site selection and design (the location and siting of new school buildings), building and facility design (recreation grounds for physical activity), and element design.

In our study we define the built environment from a broader perspective, where an interaction between people and built environment is central part of the definition. That means that we understand it not only as a static design but as a dynamic interplay between physical, social and psychological dimensions of interactions between in individual and built environment. In our definition, the built environment is always in interaction with people and their psychosocial characteristics. From this point of view we are aware that environment can influence both people's physical and mental health. And that could happen in both directions: it could increase our physical and mental health or it could have negative consequences on our health.

More recently, the links between built environment and health have been revived by interdisciplinary research addressing health disparities and chronic diseases, and the health-related behaviours associated with them. While most health-related research regarding the built environment has focused on physical health (Pliakas et al., 2017), there is a considerable of evidence linking the built environment and mental health (James, Hart, Banay, Laden, & Signorello, 2017; Knight, Lopez, Comfort, Shumway, Cohen, & Riley, 2014). A growing body of research suggests that urban design has an effect on health and well-being. Both, psychical as well as mental health that is related to build environment characteristics could be enhanced by various aspects of health promoting behaviour.

The research problem in this article is to identify the dimensions of health promoting behaviour that are linked to built environment. The objectives are:

- 1) To identify the fundamental health promoting behaviour in relation to built environment;
- 2) To identify the overarching categories of factors of health promoting behaviour.

The main hypothesis is that the characteristics and living conditions in built environment are related to the health promoting behaviour.

## **2. Theoretical baselines**

Theoretically, characteristics of the built environment can influence health behaviours directly by differential access or exposure to health-promoting or damaging environments. The research show (Cohen, Inagami, & Finch, 2008; Hogan, Leyden, Conway, Goldberg, Walsh, & McKenna-Plumley, 2016) that the impact and importance of the built environment in health promoting behaviour will differ according to the behaviours, context and population of interest. For example, traits within the built environment of the street setting such as a sidewalk or crossing signal may be particularly relevant to interventions promoting walking behaviours among children, the elderly, and other vulnerable populations with different visual or mobility levels. In many cases, context is a key consideration. School environments are relevant contexts in the lives of children and adolescents and may be particularly suitable for interventions influencing both nutrition and physical activity while the work environment is likely central to many adult behavioural interventions. Other



built environment contexts, such as, community parks where people take some recreation and socialize may be important to interventions focused on overall leisure-time physical activities.

Cradock and Duncan (2014) identify the following associations between traits of the built environment and behaviours: physical activity, healthy eating, tobacco and alcohol use, mental health outcomes, injury prevention, and traffic safety. They argue that built environments can promote physical activity by physical activity promoting facilities and environments and they illustrate that with examples such as cycling facilities for transportation, recreational walking and the urban form characteristics of land-use mix. Next, local stores, supermarkets, and fast food restaurants in neighbourhood can influence nutrition-related behaviours by access and marketing of foods and beverages. Regarding the substance use, they evaluated associations between the built environment and substance use, namely tobacco and alcohol use, positing that access can influence use. Several studies show that access to tobacco retailers in the residential and school neighbourhood environments of youth is associated with their increased tobacco use (Chan & Leatherdale, 2011; Koh, Alpert, Judge, Caughey, Elqura, Connolly, & Warren, 2011; West et al., 2010). Research on built environments and depression outcomes suggests that the built environment can be associated with depressive symptoms (James et al., 2017) through a variety of pathways. For example, greater access to destinations and community design traits in the built environment may promote socialization (Hoyt, 2006) and physical activity (Kerr et al., 2016; Oliver et al., 2015), both of which may contribute to improved mental health (Rollings, Wells, Evans, Bednarz, & Yang, 2017; Ottoni, Sims-Gould, Winters, Heijnen, & McKay, 2016). Some evidence supports pathways linking the built environment to decreased depression (Berke, Gottlieb, Moudon, & Larson, 2008) while other studies suggested a null association (Schootman, Andresen, Wolinsky, Malmstrom, & Miller, 2007). As public health campaigns promote physically active transportation, the safety of pedestrians and bicyclists becomes an important concern.

### **3. Methodology**

Meta-analysis is a complex statistical analysis used to examine and combine the results of a large number of studies that explore a related problem (Walker et al., 2008). According to Kastrin (2008), it consists of the following steps: research assumptions, definition of inclusion and exclusion criteria, search and selection of studies, quality assessment of studies, selection of data and results, standardisation and calculation of effect size, assessment of heterogeneity and sensitivity analysis, calculation of the total rate of the effect size and visualisation of results. Meta-analysis in a broader sense, sometimes also called systematic review (e.g., Higgins & Green, 2011), provides detailed summaries of the best review studies related to the research question posed. Systematic review shares some steps with meta-analysis, although it is frequently oriented less towards quantity and more towards quality (Walker et al., 2008).

This article uses the basic form of meta-analysis in a broader sense by following these steps:

- 1) Research assumption:
  - Built environment has an effect on individual's health promoting behaviour
- 2) Definition of inclusion criteria:
  - Original or review article (dissertations not included)
  - Clear methods and statistical data supporting the main findings
  - Number of participants precisely defined
  - Keywords in the title, summary, table of contents, aids, or main text;
- 3) Search and selection of studies:
  - We started with research in the 10 year period between 2007 and 2017
  - The search was conducted in the EBSCO, PsychInfo

All database searches were last conducted on July, 16, 2017.

#### 4. Results and interpretation

Table 1 shows the results of the meta-analysis in a broader sense, in which we included all articles relating to keywords. The main key phrase is “built environment” which is connected to: health, health behaviour, psychological health, mental health, physical activity, well-being, obesity, depression, substance abuse and safety.

Table 1: Hits for keywords for meta-analysis in broader sense for 2007–2017 in the EBSCO, PsychINFO

Keywords	Published sources in PsychINFO
built environment and health	1092
built environment and health behaviour	207
built environment and psychological health	15
built environment and mental health	146
built environment and physical activity	494
built environment and obesity	179
built environment and well-being	104
built environment and depression	33
built environment and substance abuse	10
built environment and safety	288

When the keyword “health” was entered, the PsycINFO databases found 1092 published sources. The most of them are studies of physical activities (Oyeyemi et al., 2016; Rollings et al., 2017), such as active travel (Oliver et al., 2015) health behaviour, mental health, depression (James et al., 2017 etc.), obesity (Xu & Wang, 2015), so we narrowed our research in more specific keywords. This set of analysis highlighted 494 articles and book chapters about physical activities, 288 about safety (Bracy et al., 2014; Foster, Hooper, Knuiman, Christian, Bull, & Giles-Corti, 2016 etc.), 207 about health behaviour (Badland, Foster, Bentley, Higgs, Roberts, Pettit, & Giles-Corti, 2017; Cradock & Duncan, 2014 etc.), 179 about obesity (Carroll, Paquet, Howard, Coffee, Taylor, Niyonsenga, & Daniel, 2016; Martin, Ogilvie, & Suhrcke, 2014 etc.), 146 on mental health (Astell-Burt, Mitchell, & Hartig, 2014; Knight et al., 2014 etc.) and 104 on well-being (Hooper, Ivory, & Fougere, 2015; Ottoni et al., 2016). Regarding the links between built environment and other key words, such as: psychological health, depression and substance abuse we found less than 35 hits for each key word. We screened the remaining articles by reading the full articles. For further analyses we included the articles matching the keywords that were selected by relevance criteria in EBSCOhost PsychINFO database. On the bases of our research problem, 24 articles on links between built environment and health promoting behaviour were selected.

##### Physical activities and safety

A recent review of the literature on the links between built environment and physical activities (Benton, Anderson, Hunter, & French, 2016) found that the built environment in which we live is now widely recognised as a key barrier, or facilitator, to being physically active. Built environment refers to physical structures of the environment that have been constructed or modified by people, such as buildings, open spaces, footpaths, cycle lanes, parks, and trails (Sallis, Floyd, Rodríguez, & Saelens, 2012).

Despite the tremendous increase in research of built environment in relation to physical activities few researchers have addressed that problem through the lense of individual perception of built environment. In

2016 a group of researchers (Kerr et al., 2016) developed an instrument which measures exactly this area: perceived environment. It's an instrument named Neighbourhood Environment Walkability Scale-Abbreviated NEWS-A, which is a shorten version of NEWS (Cerin et al., 2013). NEWS-A scale consists of 54 items that measure the following areas:

- a) Residential density, that means weighted rating of housing types in neighbourhood;
- b) Land use mix-access;

Examples of items are: "Stores are within easy walking distance of my home", "There are many places to go within easy walking distance of my home", "It is easy to walk to a transit stop (bus, train) from my home" etc.;

- c) Street connectivity;

Examples of items are: "The distance between intersections in my neighbourhood is usually short", "There are many alternative routes for getting from place to place in my neighbourhood" etc.

- d) Pedestrian infrastructure;

Examples of items are: "There are sidewalks on most of the streets in my neighbourhood", "My neighbourhood streets are well lit at night", "Walkers and bikers on the streets in my neighbourhood can be easily seen by people in their homes" etc.

- e) Aesthetics;

Examples of items are: "There are trees along the streets in my neighbourhood", "There are many interesting things to look at while walking in my neighbourhood" etc.

- f) Traffic safety;

Examples of items are: "There is so much traffic along nearby streets that it makes it difficult or unpleasant to walk in my neighbourhood", "The speed of traffic on the street I live on is usually slow" etc.

- f) Crime safety;

Examples of items are: "There is a high crime rate in my neighbourhood", "The crime rate in my neighbourhood makes it unsafe to go on walks during the day" etc.

- g) Perceived distance to local destinations such as: supermarket, post office, transit stop, park or other public open space, school etc.

The Neighbourhood Environment Walkability Scale - A (NEWS-A) is frequently used worldwide for assessing perceived attributes of the neighbourhood built environment for physical activity. Kerr et al. (2016) used this scale in a 17-city study of perceived environmental correlates of walking and cycling for transport. The results demonstrated many environmental attributes supporting both cycling and walking. Their study highlights the importance of examining walking and cycling separately and of testing neighbourhood attributes discretely.

## **Health behaviour**

Regarding links between built environment and health promoting behaviour we chose the articles discussing the prevention of obesity and promoting mental health and well-being of residents.

When it comes to obesity, it's well known that obesity is a major public health concern worldwide. Interest in the relationship between the built environment and obesity is growing (Papas et al., 2007), partly because environmental modifications could have sustained population impact (Sallis et al., 2006). Christian, Giles-Corti, Knuiman, Timperio, & Foster (2011) conducted an interesting study about the influence of the built environment, social environment and health behaviour on body mass index. They found out that two factors are associated with body mass index: individual socio-demographic and social environment. Among social environmental factors are the most prominent lack of social support for physical activity and healthy eating, living with overweighed partner, while among built environment are proximities to fast food stores, lack of grocery stores and lack of recreation facilities.

Recently, there is a considerable amount of literature on well-being in older adults (Dutton, 2014; Engel, Chudyk, Ashe, McKay, Whitehurst, & Bryan, 2016; Ottoni et al, 2016), children and adolescents (Christian et al., 2015, Hooper et al., 2015) as well as across the lifespan (Hogan et al., 2016). A number of

studies (Beard et al., 2009; Finlay, Franke, McKay, & Sims-Gould, 2015) have found that neighbourhood environments significantly influence health and well-being, especially as people age. Both built and social environments influence health promoting behaviour within urban settings. Ottoni et al. (2016) interviewed 28 participants ranged in age from 61 to 89 to find out how the built environment, influence older adults' experiences of mobility and well-being. They discovered that especially neighbourhood specific features, such as benches, positively contributed to older adults' mobility experiences by: enhancing their use and enjoyment of green and blue spaces, serving as a mobility aid, and contributing to social cohesion and social capital. They addressed the increased needs of an aging demographic, urban planners might consider the quality and presence of microfeatures as part of an immediate and inexpensive strategy to create supportive neighbourhoods for people of all ages and abilities.

In a systematic review, Christian et al. (2015) analysed 32 articles on childhood and built environment. They revealed that the presence of child relevant neighbourhood destinations and services were positively associated with early child development domains of physical health and wellbeing and social competence. Parents' perceptions of neighbourhood safety were positively associated with children's social-emotional development and general health. Population representative studies using objective measures of the built environment and valid measures of early child development are warranted to understand the impact of the built environment on early child health and development. In a study of happiness and health across the lifespan in five major cities Hogan et al. (2016) showed that three of the neighbourhood satisfaction factors, such as safety and walkability, social network and traffic and noise were significant correlates of residents' mental health. Their findings suggest that aesthetics and greenery, crime, and traffic load and safety may be particularly important perceived environmental factors impacting on residents' mental health.

## 5. Conclusion

The present study aimed at investigating the relations of built environment and health promoting behaviour. In our study the built environment is defined from a broader perspective, that an interaction between people and built environment is central part of the definition. That means that we understand it not only as a physical statue but as a dynamic interplay between physical, social and psychological dimensions of interactions between in individual and built environment. Through a meta-analysis in a broader sense, the current study revealed that health promoting behavior is not a single but rather a very complex psychological and community oriented agenda which combines various and hierarchically oriented variables. On a highest position, there is, of course, which splits on physical activities and safety. More specifically, our review found evidence of three categories of health promoting behaviour: obesity prevention behaviour, mental health promoting behaviour and well-being promoting behaviour. We share the argumentation of those authors (Armstrong, Lim, & Janicke, 2015; Benton et al., 2016; Cradock & Duncan, 2014) who state that qualitative modifying and designing of the urban built environment could improve initiate and sustain meaningful health-related behavior change.

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# **Sustainability principles in retrofitting and re-use of industrial heritage buildings**

Živa Kristl

Nova University, European faculty of Law, Slovenia

E-mail: ziva.kristl@evro-pf.si

Alenka Temeljotov Salaj

Norwegian University of Science and Technology, Norway

alenka.temeljotov-salaj@ntnu.no

## **Abstract**

Energy retrofitting of existing buildings and among them also retrofitting of historic and heritage buildings is becoming increasingly important and specifically in EU also supported by various funding schemes. Meanwhile the results in the residential and public sector are already noticeable, many historic buildings previously intended for production (industrial, agricultural buildings) have been facing functional redundancy. In most cases, the investments for the adaptive re-use and energy refurbishment of these buildings are not interesting for private sector and cannot be financed by the public sector. In practice this situation may result in further degradation or even collapse of these valuable public assets. This paper is intended to define the specific obstacles and limitations in the field of energy retrofitting and adaptive re-use of industrial buildings. For this purpose a literature review of sustainability principles in the framework of reuse and retrofitting of industrial heritage buildings is presented. Literature review is based on the relevant literature search according to five specific fields: environment, economy, social-cultural aspects, technical questions and organisation. Many authors emphasise the need to find a suitable approach to preserve architectural heritage. They further suggest that introduction of new technologies is essential to improve energy efficiency and climate resilience. New financing schemes, including a wider variety of sources and actors have to be found with an aim to support the institutions and local or national policies that may obstruct or enhance implementation of new measures.

**Keywords:** Sustainability in Environment, Socio-Economic, Living environment, Demographic context



## 1. Introduction

Many authors state that heritage buildings are vital in terms of transferring cultural identity and historical memory to further generations (Misirlisoy and Günçe, 2016). They convey stories of the past urban landscapes related to preservation of emotional safety, place attachment, identity and community spirit (Sutestad and Mosler, 2015). Simultaneously they are preserving technical and architectural legacy of a certain space. The common belief that heritage buildings are a cultural asset that has to be preserved for future generations is also supported with many international documents (UNESCO 2011; ICOMOS 2011; Europa Nostra 2009; COM 2014). Meanwhile the heritage refurbishment results in the residential and public sector are already noticeable (Penića et al., 2015; Filippi 2015; Lewis et al. 2013), many historic buildings previously intended for production (industrial and agricultural buildings) have been facing functional redundancy. According to (Petković-Grozdanovića et al., 2016; Chan et al., 2015), this has happened due to the restructuring of the economy that has led to the relocation of production and in some cases even complete extinguishing of certain industries.

Industrial sites are proof of extraordinary engineering skills, willpower and cultural milestones (Sutestad and Mosler, 2015) and are especially interesting from architectural and structural point of view because of large span structures, monumental dimensions and use of innovative technologies and concepts in time of their construction. Examples of such exceptional legacy, nowadays preserved in their original form or used for other purposes, are e.g. New Lanark mill (Newlanark, 2017), Royal Saltworks of Arc-et-Senans (2017), Van Nelle Factory in Rotterdam (2017), Fagus Factory in Alfeld (UNESCO, 2017), the Lingotto Fiat Factory (2017) and others, many listed as the UNESCO world heritage. Many industrial sites, however do not share the same fortune. As Agaliotou (2015) and (Polyzos et. al., 1998) report, many sites in Greece were demolished or damaged, some of which even before being registered. Similar has happened in many other countries. For this reason (Belláková, 2016) states that there exist the urgency of recording and preserving the physical evidence of industrial heritage. Cho and Shin (2014) further stress the importance of intrinsic value of industrial built forms as heritage objects that requires cultural valorisation of obsolete spaces as heritage sites (creating a new set of cultural meanings). Today, industrial heritage presents a great functional and cultural potential (Romeo et al., 2015) that has to be reinvented.

If preserved, these buildings represent a significant percentage of the architectural heritage, which could be used for other purposes. In most cases, however, the investments for the adaptive re-use and energy refurbishment of these buildings are not interesting for private sector (Azizi et al., 2016; Filippi, 2015; Tiberi and Carbonara, 2016) and are too demanding to be financed by the public sector. Many authors (Penića et. al., 2015; Ascione et al., 2015; Virtudes and Almeida, 2016), therefore, emphasise the need to find a proper approach to preserve architectural heritage. Roter Blagojević and Tufegdžić (2016) state that the introduction of sustainable development principles into heritage protection has resulted in significant changes of theory and practice of preservation and development of historical areas and buildings. The principle of sustainable development includes environmental and economic aspects but also equally important socio-cultural components. Kamari et al. (2017) on the other hand point out that an overview of recent research related to building renovation has revealed that efforts to date do not address sustainability issues comprehensively. This is especially true for industrial heritage, which has not been widely researched.

This paper is intended to fill this gap and to define the specific obstacles and limitations in the field of retrofitting and adaptive re-use of industrial heritage buildings in the framework of sustainable development. For this purpose a literature review through sustainability principles of reuse and retrofitting of industrial heritage buildings is presented. Literature review is based on the relevant literature search according to five specific fields: environment, economy, socio-cultural aspects, technical and process quality (BMUB, 2016). The latest state-of-art has been critically assessed and the developments along with potential future research

focuses, have been identified. Findings of the study are the basis for further research and development of enhanced strategies for energy retrofitting of heritage buildings.

## **2. Study setup**

The aim of the presented review is to provide a comprehensive summary of the factors affecting adaptive reuse of industrial heritage buildings and the employed strategies that affect decision-making. In the first step, the data has been collected through literature survey and content analysis, searching through various scientific databases (e.g. Science Direct and World Wide Science) for peer-reviewed publications from 2000 to 2017 written in English, with the keywords “heritage building”, “historical building”, “listed building”, “industrial building”, “deep renovation”, “revitalization”, “sustainability” and “refurbishment” in combination with “environmental”, “cost optimal”, “user comfort”, “building performance”, “energy efficiency”, “energy retrofitting”, “technical” and “sustainable”. Also other relevant web sources were searched for project information and legal documents. In the second step, the selected studies have been analysed, employing the defined factors (research subject, considered issues, proposed approaches and results). Finally, the main trends and future perspectives associated with the industrial heritage buildings retrofitting measures were identified.

## **3. Research results and findings**

### **3.1 Socio-cultural aspects**

According to BMUB (2016), socio-cultural and functional quality include factors that influence user satisfaction and their attitude towards the environment. This means that a high degree of acceptance has a positive impact on the building’s sustainability. Also, heritage conservation in urban renewal has a social role, having significant impact on enhancing a community's sense of place, identity and development (Yung et al., 2017). At least the following socio-cultural objectives should be considered: ensuring the quality of design, providing functionality, health, safety and comfort to users.

Applying these objectives to industrial heritage buildings, the quality of design is the key element, which has resulted in the buildings to be declared a cultural heritage. The cultural sustainability includes preservation of the architectural elements, space and materials of original buildings and preservation of these features is similar to other types of heritage and historical buildings. Architectural and urban features of industrial buildings are common in many countries. A special element that separates them from other typologies are the structures that have, according to Romeo et al. (2015), historically characterized the proto-industry. Typically steel structures (Belláková, 2016) and early reinforced concrete structures, iron, cast iron, the use of large glass surfaces and shed roofs (Romeo et al., 2015) are of great importance for the future generations. Merciu et al. (2014) e.g. emphasize the diversity and richness of expression of the industrial buildings architecture. In this sense it is vital to preserve its unique qualities in an appropriate way.

Simultaneously it is necessary to point out their value as a functional (Romeo et al., 2015) and a non-renewable resource (Roter Blagojević and Tufegdžić, 2016). In many cases, heritage buildings are well-preserved and presented to public in their original form (Maraveas and Tasiouli, 2015) or provided with economically viable uses (Tam et al., 2016). In others, however, communities are facing the challenge of what to do with obsolete industrial buildings and areas. Revitalization through adaptive reuse is considered to be a favourable option, with many buildings being adapted to other uses (Ren et al., 2014; Mısırlısoy and Günçe, 2016; Fernandez-Fernandez et al., 2017) thus balancing the conflict between cultural heritage and development (Yazdani Mehr et al., 2017). Romeo et al. (2015) consider that it is possible to identify industrial heritage features that meet the increasing demand for architectural and urban spaces intended for cultural and social needs.

Majority of authors agree that industrial buildings with their large volumes can be easily adapted to other uses, especially to public spaces. It is particularly important to analyse factors affecting adaptive reuse decision-making and to develop a holistic model for adaptive reuse strategies for heritage buildings (Mısırlısoy and Günçe, 2016). Some authors, however, do not agree with the above developments and believe that adaptive reuse of architectural heritage can detrimentally change the social, cultural and historic values of historic buildings, especially when there is a change of the original function of the building (Ahn, 2009).

In the field of user health and comfort, legislation is mainly focused on safety and health of users (CPR, 2011), while research and studies are oriented mainly on user comfort. There are many studies considering thermal comfort in various types of heritage buildings. E.g. Martinez-Molina et al. (2016), Yung (2012) and Fabbri (2013) have published comprehensive reviews aiming at energy efficiency and thermal comfort. Troi (2011) studies the potential impact of conservation compatible energy refurbishment on climate protection and living conditions. Specifically, in industrial heritage buildings, the studies are few and do not offer a consistent results. It seems that user comfort greatly depends on the specific project quality. For instance, Rani (2015) presents study on the office building, which was included in the adaptive reuse strategy. He notes that the occupants' comfort in terms of the indoor environmental conditions was overlooked, causing dissatisfaction and negative impacts on the occupants due to poor quality of the indoor air. Contrary to this study, Mundo-Hernández et al. (2015) present a post-occupancy evaluation study conducted in an old factory building converted into an art gallery. They state that in spite of the fact that the refurbishment works destroyed several historic building elements, the re-use of old industrial spaces seems pertinent and users perceive the building as comfortable.

### **3.2 Technical aspects**

Technical quality relates to building performance in sense of structural stability, fire protection, moisture protection, sound and thermal insulation, weather resilience and other aspect like cleaning, maintenance and disintegration (BMUB, 2016). Basic issue of all refurbishment projects is structural stability. This area demonstrates many cases of implementation of innovative materials and techniques. Masciotta et al. (2017) stress the importance of structural monitoring as a diagnosis and control tool in the restoration process of heritage structures. Some authors propose structural consolidation using new technologies like structural membranes (Llorens and Zanelli, 2016), metallic grouted anchors for corner connections of masonry structures (Paganoni and D'Ayala, 2014), and corrosion inhibition coatings for metal structures (Flexer et al., 2015). In the field of moisture presence, Colangiuli et al. (2015) propose multifunctional coatings with photocatalytic and hydrophobic properties to prevent further structure decay. Some authors also consider questions of biodecay due to moisture presence (Maraveas and Tasiouli, 2015; Dornieden et al., 2000) and atmospheric influences (Schiavon, 2000), which are a very common problem.

Specific question affecting many historical buildings, especially in the Mediterranean basin, is seismic consolidation of buildings. Poor seismic stability of some buildings is often the consequence of non-existent seismic regulations in time of their construction. Lorenzoni et al. (2016) note that in the last decades, effective seismic protection and vulnerability reduction of cultural heritage buildings has faced a growing interest in structural health monitoring as a knowledge-based assessment tool to quantify and reduce uncertainties regarding their structural performance. Formisano and Marzo (2017) in their study propose a simplified and refined method for seismic vulnerability assessment and retrofitting of cultural heritage masonry building, among other studying geometric properties. Shariq et al. (2017) also present a study on masonry building subjected to earthquake loading. Some studies are devoted to industrial heritage buildings of later date. Souami et al. (2016) in their study consider the impact of buildings architectural proportions built among 1830–1930 upon their behaviour during earthquakes. Sorace and Terenzi (2013) present structural assessment of “Palazzo del Lavoro” by Pier Luigi Nervi, built in 1961. Lorenzoni et al. (2016) suggest that monitoring

can be implemented to prevent unnecessary interventions or to control effectiveness of already applied strengthening solutions.

A very important question is also fire hazard. Marrion (2016) draws attention to the fact that without proper planning, in heritage buildings, hazards may develop into disasters and may cause losses to sites, structures and artefacts. This can also affect cultural tourism and the financial resources these sites introduce to local communities. Romão et al. (2016) propose a framework for the simplified risk analysis of cultural heritage assets. For estimates of probabilities of occurrence under various conditions due to non-compliances to the building regulations, He and Park (2017) propose a novel application of statistical analysis of structural fire hazards. Ibrahim et al. (2011) develop fire risk assessment method for heritage buildings and Naziris et al. (2016) optimize fire protection of cultural heritage structures which is based on the analytic hierarchy process.

In other heritage building fields, the majority of studies is oriented into improvement of energy efficiency and climate resilience (Blecich et al., 2016; Galatioto et al., 2016; Harrestrup and Svendsen, 2015; Murgul and Pukhkal, 2015; Tiberi and Carbonara, 2016; Walker and Pavia, 2015; Zagorskas et al., 2014). The important stimulus are increasingly demanding codes and regulations in the field of building energy performance, as well as the implementation of national rules regarding energy management and sustainability (EPBDr, 2010; EE-03-2014; Vieites et al., 2015). The experiences can be partly transferred to the industrial heritage in spite of the fact that heritage buildings may architecturally differ from the rest of the built heritage (Romeo et al., 2015). The implementation challenges to the adaptive reuse of heritage buildings in the framework of sustainable and low carbon society are many (Yung and Chan, 2012), but are being managed (Webb, 2017). Although there are not many studies of energy refurbishment of industrial heritage, separate cases can be found in literature (Gourlis and Kovacic, 2016).

Industrial heritage buildings generally have a good resilience to time and climate as they were usually adapted to local conditions. However, their environment has changed, owing to urbanisation and climate change processes. The main effects of the climate change are as follows: high and long lasting temperatures during summer, precipitation pattern change, intensification of the local winds, to which we can add more intense or even frequent extreme events, such as: drought, abundant precipitation, snowfalls and hailstorms (Mosoarca et al., 2017). As Aysha and Monto Mani (2017) note, climate change is manifesting at a much faster rate than expected and its influence on buildings is unclear. Adaptation to climate changes is becoming an additional functional requirement of built heritage (Kristiánová et al., 2016). Climate change adaptation in buildings is shortly expected to be a domain of specialized research, requiring utmost attention and intellectual resources for action (Aysha and Monto Mani, 2017).

### **3.3 Economic aspects**

Economic quality reflects in the optimisation of the building life-cycle and in increased productivity of resources (e.g. cost-optimisation, capital and value preservation) (BMUB, 2016). Many municipalities are facing the challenge of financing refurbishment of obsolete and abandoned heritage industrial buildings. Numerous are demolished, but in some cases considerable investments are made to preserve the cultural aspects of industrial sites (van Dujin et al., 2016). Policy makers use various approaches to encourage owners to revitalise their property however, in some cases the implementation of policies is slow (Chan et al., 2015) or even unsuccessful (Ren et al., 2014). The reasons of failure are many, from core weaknesses of the policy, pragmatic development complications, building-specific reasons to various contextual issues (Ren et al., 2014). Often reported problems are also changing economic and social needs and issues related to sustainability, that the owners, designers, property developers and planners are facing in their work (Bullen and Love, 2010). Miscommunications and fragmentary employment of strategies by various stakeholders is another issue that also has to be considered (Bullen and Love, 2010). New, more successful approaches are emerging and are being reported. Ascione et al. (2015) propose cost-optimal methodology for the design of

the refurbishment of historic buildings. Similar approach is proposed by Becchio et al. (2016), who develop a cost-optimal methodology for national authorities as a decision-making tool for supporting a private investor in choosing the most viable energy scenario. One of innovative approaches is also adaptive reuse realised through partnership scheme with non-profit organizations (Tam et al., 2016).

Cercleux et al. (2012) point out the interdependence between the quality of a heritage building and the suppliers and recipients of services related to the heritage. Usually the renewal plans are designed to stimulate urban renewal in the vicinity of the heritage sites (van Dujin et al., 2016). For instance, we can observe positive external effects by investigating the development of real estate prices in the surrounding residential areas (van Dujin et al., 2016). Yazdani Mehr et al. (2017) examine the values attached to heritage buildings and the importance and challenges associated with various forms of adaptive reuse. They find that adaptive reuse has added economic value to the examined heritage buildings and the surrounding areas. As observed by Agaliotou (2015), adaptive reuse of industrial heritage can also have an impact on the development of local economy, culture, quality of life and alternative forms of tourism. Wright et al. (2016) present meta-analysis of monetary valuation studies of cultural heritage which suggests that heritage sites in areas with higher population density hold higher value, and conservation that supports adaptive re-use of sites generates higher values than passive protection. This means that urban environments are important drivers of positive external effects after adaptive reuse of heritage sites. Van Dujin et al. (2016) suggest that the external benefits cover a substantial part of the redevelopment costs. They further propose that external benefits of redeveloping industrial sites residential areas should be considered in spatial policy (van Dujin et al., 2016).

### **3.4 Environmental aspects**

Environmental quality relates to the protected category of natural environment aiming at protection of natural sources and protection of ecosystem (BMUB, 2016). Many authors agree that industrial heritage possess a strong development potential, however, it can also carry environmental and other burdens (Kristiánová et al., 2016; Ifko, 2016). Not just the buildings, the sites themselves may present a potential environmental hazard. Many examples of conversions of urban brownfields and industrial heritage sites into greenspaces, exhibit both social benefits and environmental gains. According to (Kristiánová et al., 2016) the benefits of regeneration of the former industrial sites to green areas include playground and recreational areas, enhance the scenic beauty and neighbourhood appeal, improve the living conditions, raise property values, provide ecosystem services, habitats for wildlife, foster adaptation to climate change and many others. Therefore it is of great importance to employ a comprehensive management of industrial heritage sites as a basis for sustainable regeneration (Ifko, 2016).

Munarim and Ghisi (2016) address the topic of environmental impacts involved in the heritage building rehabilitation. They draw attention to the fact that rehabilitating a building is a unique opportunity to reach higher levels of environmental performance. In spite of the fact, that reconstruction can be an environmental load in itself, compared to demolition and construction of new buildings, refurbishment offers both economic and environmental benefits. Assefa and Ambler (2017) note that building repurposing through selective deconstruction and building system reuse and also recovering building waste after demolition through material reuse and recycling, involving reduction of energy and resource consumption and other environmental impacts, can be achieved for end of life building stock. Indeed, life cycle model taking into account embodied energy in existing buildings could be a key factor to develop sustainable strategies based on adaptive reuse and a consequent prolongation of their lifespan (Fuentes, 2017; Xie, 2015). Integrated approaches interconnecting several fields are becoming increasingly implemented (Pisello et al., 2016).

#### 4. Quality of processes

In the framework of process quality we have to consider the aspects of quality of planning process, construction and preparation for operation (BMUB, 2016). Design and decision making methods have increased the quality of processes in the design phases of heritage building projects. In the field of standardisation a lot of work on the preparation of national and international guidelines and standards has already been done (ASHRAE 34P, 2016); EN 16883, 2017). In the recent years also some national guideline documents for energy efficient renovation of cultural heritage buildings (e.g. Tomšič et al. 2017; AICARR, 2014; de Santoli, 2015) have been presented. Ornelas et al. (2016), yet, point out inadequacy and incompatibility of actual codes' requirements in relation to the particular constructive, architectural and material characteristics of the built heritage. They consider that this presents a major obstacle for retrofitting of heritage buildings and further suggest a holistic methodology that ensures maximum preservation of built heritage through minimum, but sustained interventions. This is why a number of scholars have devoted their attention to methodological approach toward heritage building retrofitting.

Ferretti et al. (2014) point out the complexity of decision making caused by the presence of different objectives to be pursued, the public/private nature of the goods under investigation, the existence of several values (historical, artistic, cultural, economic, etc.), the presence of different actors (public government representatives, architects, architectural historians, developers and owners). In decision processes related to the reuse of historical buildings, conflicts can arise and the availability of analytical frameworks able to support the process becomes of high importance. It has been generally agreed that Multicriteria Decision Analysis (MCDA) can offer a formal methodology to deal with such decision problems, taking into account the available technical information and stakeholders' values. Experience from other fields can present a large advantage. Fregonara et al. (2017) for instance propose a multidisciplinary decision making approach, comprising the contribution of real estate market and economic evaluation of project, architectural technology and building physics, application of the life cycle costing methodology and energy analyses, for retrofitting project of a single family house. Kamari et al. (2017) present a comprehensive sustainability framework to audit, develop and assess building renovation performance, and support decision-making during the project's lifecycle, addressing sustainability of the entire renovation effort including new categories, criteria, and indicators. Further studies in the field of industrial heritage follow the same paradigm. Merciu et al. (2014) propose a structural and typological analysis of the forms of industrial heritage, Penića et al. (2015) develop a revitalization method with the purpose to preserve and restore historical landmarks, which assign a new function, Becchio et al. (2016) present a cost-optimal methodology, conceived for national authorities as a decision-making tool for supporting a private investor in choosing the most viable energy scenario and Claver et al. (2015) propose a global methodology for the study of the Spanish Industrial Heritage.

In the construction phase, Azizi et al. (2016) among the most important issues that hinder historic building conservation counts technical matters, including lack of resources and skilled workforce. One of the objectives, therefore, is to invest into human resources and improve education in this field. In the area of new approaches, building information modelling (BIM) used for the design activities (Biagini et al., 2016) and adapted to heritage buildings (Heritage Building Information Modelling - HBIM) (Khodeir et al., 2016) is considered to be the key new technology that can increase the design and construction quality. The researchers are also considering using BIM in automation in construction and corresponding management systems (Ghaffarian Hoseini et al., 2017).

Akande et al. (2016) state that with energy performance becoming a crucial factor, the operational phase of heritage building projects is increasingly gaining importance. In many heritage building projects, however, the operational phase is less considered, and a systematic way of analyzing energy performance during the operation is often lacking. They suggest baseline project planning, periodic updating, monitoring, and managing the energy use pattern to optimise energy performance. Further to this, Wang and Xia. (2015)

propose optimal maintenance planning for building energy efficiency retrofitting from optimization and control system perspectives.

In the phase of heritage building maintenance, assessment of the functional service life using statistical tools, allowing prioritizing the maintenance and preventive conservation actions is described by Prieto et al. (2017) and an expert system for predicting the service life of buildings based on risk management standards is presented by Prieto Ibáñez et al. (2016). Both can be applied on homogeneous groups of buildings.

## **5. Comments and conclusion**

Preservation and refurbishment of heritage buildings is a multidisciplinary activity that includes cultural, physical, digital, environmental, human and social aspects (COM 477, 2014). The idea of sustainable development, which in addition to environmental and economic aspects also contains equally important socio-cultural elements, has also emphasized cultural heritage as a non-renewable resource (Roter Blagojević and Tufegdžić, 2016). Balancing conflict between cultural heritage and development is indeed an important issue for every society (Tam et al., 2016). Many authors, therefore, emphasise the need to find a suitable approach to its sustainable preservation. As Kamari et al. (2017) note, the current research related to building renovation and re-use does not address sustainability issues comprehensively. The question of how to approach the holistic sustainability objectives within the building renovation context remains to be answered.

As can be seen from the considered examples, the studies engage dual approach to quantitative aspects like energy consumption, which can be calculated or measured, and qualitative considerations, such as user comfort and cultural heritage values (Franco and Magrini, 2017). Such complexity can cause the problem of opposing approaches and communication gaps because of different objectives and approaches (Ferretti et al., 2014). Such situation evokes the need for a cross-disciplinary work. A step in this direction is presented by Roberti et al. (2017), who propose a methodology for multi-objective optimisation that allows for finding and comparing optimal retrofits for historic buildings in a multi-perspective and quantitative way by using an analytical hierarchic process for quantification of refurbishment compatibility and Misirlisoy and Günçe (2016), who suggest a holistic approach to adaptive reuse strategies for heritage buildings. Claver et al. (2015), however, bring attention to another important fact. There exist different heritage building typologies, and each one has a particular nature. The same aspects are not equally important in all the cases. The need to simultaneously consider different criteria with different levels of importance makes it reasonable to think in multicriteria methods. (Kamari et al., 2017) e.g. propose the use of a multi-dimensional approach and application of soft systems methodologies with value focused thinking.

Transferring these principles to industrial heritage buildings, Roter Blagojević and Tufegdžić, (2016) note that the introduction of sustainability principles has changed the approaches toward preservation and development of historic areas and buildings. Heritage buildings are not only vital in terms of transferring cultural identity to further generations (Misirlisoy and Günçe, 2016), but also represents a great functional and cultural resource (Romeo et al., 2015). An important characteristic of industrial heritage building, that separates it from other types of heritage buildings, and makes its sustainable revitalisation especially difficult, is its complexity. Firstly, as Romeo et al., (2015) note, the industrial heritage is characterised by stratification (additions, changes of use, reuse, adjustments, etc.) that has followed the evolution of technology and changes of production processes. Gradual architectural and technological additions and changes of functions are the very nature of these buildings. Secondly, the industrial restructuring processes are often accompanied by major economic and social transformations of whole zones and can cause high unemployment rates accompanied by long periods of economic and social insecurity. In such cases, the social implications connected to the extinguishing of the industrial activities are particularly relevant (Ifko, 2016). In this context, historical areas and buildings should be restored and adapted to contemporary requirements by providing them with a suitable function and constant maintenance (Roter Blagojević and Tufegdžić, 2016).

The presented aspects of sustainable reuse of industrial heritage are developing at different rates. Meanwhile, the socio-cultural and technical issues are comprehensively considered in regulation requirements, and also in various studies, the environmental impacts and economical models are less represented. Especially occupational focus is not covered enough by the scientific papers, from all three dimensions health, safety and comfort. New financing schemes, including a wider variety of sources and actors are needed to empower institutions and local or national policies that may obstruct or enhance implementation of new measures. Innovative financing models with a focus on value creation and beneficiaries are important to bring a number of ramifications, such as: the recognition of multi-faceted economic benefits of cultural heritage; new forms of governance due to the multiple actors, and; the quality of the cultural heritage building/asset that forms the basis of its life cycle potential (structural strength, energy efficiency, environmental sustainability etc.).

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# **Improving energy efficiency of existing buildings in Slovenia through regulatory incentives**

Špelca Zagorc

Nova University, European faculty of Law, Slovenia

E-mail: spela.zagorc@evro-pf.si

Alenka Temeljotov Salaj

Nova University, European faculty of Law, Slovenia

E-mail: alenka.temeljotov-salaj@evro-pf.si

Svein Bjørberg

Multiconsult AS, Norway

E-mail: svein.bjoerberg@multiconsult.no

## **Abstract**

The concept of sustainable development implies limitations imposed by the present state of technology and social organization on environmental resources and by the ability of the biosphere to absorb the effects of human activities (Sustainable development commission, 2016). By improving the energy efficiency of existing buildings with renovation activities, total energy consumption in the European Union (EU) could be reduced up to 5-6% (European Commission, 2015). However, throughout Europe, renovations of existing buildings are performed only on approximately 1% of the building stock (GPBN, 2013, p. 3). EU and national EE regulatory provisions have a crucial role in encouraging more EE renovations of existing buildings. Specific regulatory instruments have been implemented at EU and national level with the aim of stimulating energy efficiency related measures in existing buildings. However, in Slovenia, improvements of regulatory incentives could be made, which should result in (more) stimulating policies for EE investments in existing buildings. This Article will be unique in providing an overview of Slovenian regulatory provisions, regarding energy efficiency in existing buildings. The comparative analysis will focus on regulatory provisions on EU and national level, which will form a conceptual base for the determination of possible regulatory barriers, that hinder the uptake of more EE renovation activities in existing buildings in Slovenia. The presented recommendations for improvement were substantiated on the basis of the research findings of the conducted analysis of national regulatory provisions and successful EE regulatory incentives, implemented in EU Member States.

**Keywords:** energy efficiency renovations, existing buildings, regulatory provisions

## 1. INTRODUCTION

The concept of sustainable development implies limitations imposed by the present state of technology and social organization on environmental resources and by the ability of the biosphere to absorb the effects of human activities (Sustainable development commission, 2016). Rapidly growing populations and economic growth increase the pressure on resources and slow any rise in living standards (World Commission on Environment and Development, 1987, p. 7). By overexploiting resources, a society may in many ways compromise its ability to meet the essential needs of its people in the future. Living standards that go beyond the basic minimum are sustainable only if consumption standards everywhere have regard for long-term sustainability (Wheller, Beatley, 2008, p. 69). Sustainable development therefore requires the promotion of values that encourage consumption standards that are within the bounds of the ecological and not economical possibilities (World Commission on Environment and Development, 1987). Policy makers, guided by the concept of sustainable development, have to assure that growing economies remain firmly attached to ecological capabilities and that these are protected, so that they may support growth over the long term. Environmental protection is thus inherent in the concept of sustainable development, as is a focus on the sources of environmental problems rather than the symptoms.

No single blueprint of sustainability can be found, as economic and social systems and ecological conditions differ widely among countries (World Commission on Environment and Development, 1987). However, irrespective of these differences, the positive impacts of undertaking energy renovation of buildings can be summarized as economic benefits (such as energy cost saving, economic stimulus, positive impact on gross domestic product (GDP), property values, energy import bill), societal benefits (for instance reduced fuel poverty and increased health and comfort), environmental benefits (namely carbon saving and reduced air pollution) and energy system benefits (energy security, avoidance of new generation capacity and reduced peak loads) (BPIE, 2013).

Moreover, by improving the energy efficiency of existing buildings with renovation activities, total energy consumption in the European Union (EU) could be reduced up to 5-6% (European Commission, 2015). Therefore, tackling energy efficient (EE) renovation of existing buildings is crucial in meeting ambitious 2020 and 2030 energy and climate goals in the EU. However, throughout Europe, renovations of existing buildings are performed only on approximately 1% of the building stock (GPBN, 2013, p. 3). To reach EU 2020 and 2030 EE targets, renovation activities will need to double from about 1% of existing stock today to 2-3%.

Experience over several decades has identified numerous barriers that hinder the uptake of renovation measures. The fact that there is a large untapped cost-effective potential for improving the energy performance of existing buildings is evidence that society in general, is not keen on investing in energy saving. A multiplicity of barriers is severely limiting the achievement of the full potential and a combination of barriers is responsible for this underperformance. Main barriers can be identified as the 'split incentives barrier' or the 'landlord/ tenant barrier', also known as the 'investor/user barrier' or the 'principal/agent barrier, regulatory barriers, financial barriers (such as lack of funds or access to finance, payback expectations/investment horizons, competing purchase decisions and price signals) and awareness, advice and skills barriers (for instance lack of advice/information, lack of awareness of energy savings potential, lack of skills and knowledge related to building professionals).

This Article will focus on regulatory barriers in Slovenia. The presented content will provide an overview of Slovenian regulatory provisions, regarding energy efficiency in existing buildings. The comparative analysis will focus on regulatory provisions on EU and national level, which will form a conceptual base for the determination of possible regulatory barriers, that hinder the uptake of more EE renovation activities in existing buildings in Slovenia. The findings of this research will also elaborate potential recommendations for improvement.

## **2. AN OVERVIEW OF SLOVENIAN REGULATORY PROVISIONS REGARDING ENERGY PERFORMANCE OF BUILDINGS**

As Slovenia is an EU Member State, it is obliged to follow all EU Legislation framework. As regards to energy efficiency in buildings, Slovenian authorities have implemented the provisions of EU Directives, such as Energy Efficiency Directive (EED)<sup>1</sup>, EPBD recast<sup>2</sup> and Renewable Energy Directive (RED)<sup>3</sup> into national legislation.

## **3. NATIONAL STRATEGIC DOCUMENTS**

Energy concept of Slovenia (EKS), which is currently being drafted, will be the basic document on the development in the energy sector. According to the Energy Act (EZ-1) it should be based on the projections of economic, environmental and social development of Slovenia and the accepted international obligations. Main targets for energy concept of Slovenia will be to reduce GHG emissions related to energy use by at least 40% by 2035 compared to the level from 1990 onwards and to reduce GHG emissions related to energy use by at least 80% by 2055 compared to the level from 1990 onwards.

Furthermore, the National Action Plan for Energy Efficiency for the period 2014 - 2020 (NEEAP 3) contains the requirements of the EED<sup>4</sup> which set the national objective of improving the energy efficiency of energy use by 20% by 2020. This means that primary energy consumption in 2020 in Slovenia will not exceed 7.125Mtoe (82.86 TWh) or, compared to the year 2012, the primary energy consumption will not increase by more than 2% (Ministry of Infrastructure, 2017a). The measures, set forward by the NEEAP 3, target the household sector, public sector, industry and transport. It also includes the obligation to annually renovate 3% of government buildings. The aim of Slovenian authorities is to ensure that all new buildings, which are owned and occupied by public authorities, are nearly zero energy buildings from 2018 onwards and in other sectors, from 2020 onwards.

Pursuant to Renewable Energy Directive (RED), Member States have to adopt a National Action Plan for Renewable Energy Sources. These plans should set annual national targets for the share of energy from renewable sources (RES) consumed in transport, electricity and heating and cooling in 2020 together with a plan to achieve the objectives. The objectives of the Slovenian energy policy for RES (AN-OVE) for 2010-2020 are to provide a 25% share of renewables in final energy consumption and 10% renewable energy in transport by 2020, stop the growth of final energy consumption, implement energy efficiency and renewable energy sources as a priority economic development and to increase the share of renewables in final energy consumption by 2030 and further.

Pursuant to the EU Decision 2009/406/EC<sup>5</sup>, Slovenia has a legally binding target to reduce GHG emissions by 2020. Strategic Operational program of measures to reduce greenhouse gas emissions by 2020 (Government of the Republic of Slovenia, 2014a) provides the basic objectives, principles, priorities and guidelines to

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<sup>1</sup> Directive 2012/27/EU of the European Parliament and of the Council of 25 October 2012 on energy efficiency, amending Directives 2009/125/EC and 2010/30/EU and repealing Directives 2004/8/EC and 2006/32/EC Text with EEA relevance. OJ L 315, p. 1–56.

<sup>2</sup> Directive 2010/31/EU of the European Parliament and of the Council of 19 May 2010 on the energy performance of buildings. OJ L 153, p. 13–35.

<sup>3</sup> Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC (Text with EEA relevance). OJ L 140, 5.6.2009, p. 16-62.

<sup>4</sup> Repealed the aforementioned Directive 2006/32/EC.

<sup>5</sup> Decision No 406/2009/EC of the European Parliament and of the Council of 23 April 2009 on the effort of Member States to reduce their greenhouse gas emissions to meet the Community's greenhouse gas emission reduction commitments up to 2020. OJ L 140, 5.6.2009, p. 136-148.



reduce GHG emissions in Slovenia in the field of climate change mitigation by 2020 with a view to 2030. It focuses on sectors, that represent the largest share of GHG emissions and are outside the EU emissions trading scheme (ETS), thus are subject to national commitments: buildings, transport, agriculture, waste management and others. Slovenia's target for 2020 is that GHG emissions will not increase by more than 4% compared to 2005 or that by 2020, GHG emissions would be less than 12,117kt CO<sub>2</sub>.

An operational program for the implementation of European cohesion policy for the period 2014-2020 (Government of the Republic of Slovenia, 2014b) is another strategic document and forms the basis for the disbursement of EUR 3.2bn of available funds from the European Regional Development Fund (ERDF), the European Social Fund (ESF) and the Cohesion Fund (CF) in the period 2014-2020. Operational program to implement the European cohesion policy is a document, which identifies priority areas in which Slovenia will invest resources in the next seven years in line with the partnership agreement between Slovenia and the European Commission for the period 2014-2020. The document follows the EU 2020 strategy and meets the requirements of each Fund, so as to ensure economic, social and territorial cohesion.

EZ-1 furthermore imposes an obligation on the Slovenian Government to adopt an Action Plan for Near-Zero Energy Buildings (AN-sNES) and renew it every three years (EZ-1, Article 331). AN-sNES for the period up to 2020 includes the objectives, programs and measures to achieve objectives set forward by EZ-1, as well as human and financial resources to implement these programs and measures (Ministry of Infrastructure, 2014a). In accordance with the requirement of EED, Article 4, Member States have to draw up a long-term strategy for mobilising investments in the energy renovation of buildings ("the strategy") of the national housing stock both public and private residential and commercial buildings. The obligation deriving from the EED is transposed in the EZ-1. The strategy sets out the operational targets for 2020 and 2030, such as a renovation of 3% of public buildings per year in the narrow public sector and a renovation of 1.8 million m<sup>2</sup> of floor area of buildings in the wider public sector in the period 2014–2023 (Ministry of Infrastructure, 2017b). The strategy furthermore strives to improve the ratio between the invested public funds and the investment incentives in the public sector to 1:3. The Slovenian strategy also includes an overview of the Slovenian building stock as well as measures and criteria for the promotion and implementation of acceptable approaches to the renovation of different building types (Ministry of Infrastructure, 2017b).

In accordance with the Energy Act (EZ-1), the transmission system operator and distribution system operator must have a development plan.<sup>6</sup> Development plans must be adopted every two years and must be coordinated with the National Energy Development Plan. On the basis of the fifth paragraph of Article 30 of the Energy Act (EZ-1), the Ministry of Infrastructure issued the Rules on the methodology for drafting the development plans of operators and other providers of energy sector activities.<sup>7</sup>

#### **4. NATIONAL LEGISLATION PROVISIONS**

Energy Act (EZ-1) sets out the principles of national energy policy, rules for operation of the energy market, forms of public utilities in the energy sector, principles and measures to achieve energy security, emphasises energy efficiency and energy savings together with increased use of energy from renewable sources, lays down the conditions for the operation of energy facilities, regulates the competence, organization and functioning of the Energy Agency and the powers of other national public bodies (EZ-1, Article 1).

The purpose of the EZ-1 (first adopted in 2014) is to ensure a competitive, secure, reliable and accessible supply of energy and energy services, taking into account the principles of sustainable development (EZ-1, Article 3). EZ-1 transposes into Slovenian legislation several European directives and regulations relating to the market in natural gas and electricity as well as energy efficiency and renewable energy sources such as

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<sup>6</sup> Plan for the development of the power system, development plan for the electricity distribution network and development plan of transmission gas network.

<sup>7</sup> Pravilnik o metodologiji za izdelavo razvojnih načrtov operaterjev in drugih izvajalcev energetske dejavnosti.

EED and EPBD recast.<sup>8</sup> EZ-1, in addition to the transposition of European legislation into national law, also regulates other areas of energy policy, for example energy infrastructure and a supply of heat.

For instance, in accordance with EED Article 5, EZ-1 introduces a Local energy concept as a key document in the field of local development and energy, coordinated with the spatial plan of the municipality (EZ-1, Article 29). Furthermore, it obliges the public sector to introduce energy management systems (EZ-1, Article 324). For this purpose, a Decree on energy management in public sector has been issued.<sup>9</sup> The Decree is bringing obligation for all public bodies to establish a system of energy management in buildings, public sector entities, taxpayers and the minimum content of this system, with the aim of increasing energy efficiency and use of renewable energy in buildings used by public sector entities (Decree on energy management in public sector, Article 1). All public bodies have to perform energy bookkeeping and achieve EE and RES goals in the building owned and used by them (Decree on energy management in public sector, Article 5). Regarding transposition of EED, this Decree is defining minimum energy performance requirements for buildings which central government will purchase or rent (Decree on energy management in public sector, Article 9).

The energy efficiency contribution, defined by EZ-1, is intended to finance the Eco Fund for raising energy efficiency in households and multi-apartment buildings. This contribution of energy efficiency is charged to district heating, electricity and solid, liquid and gaseous fuels. Contribution to energy efficiency is paid by each final customer of electricity and natural gas network operator, each final customer of heat from the network, as well as solid, liquid and gaseous fuels other energy supplier (EZ-1, Article 317). The suppliers of electricity, heat, gas and liquid and solid fuels to final customers are liable to achieve savings, which should ensure energy savings among final customers (EZ-1, Article 318).

Under EED, Article 7, MS are obliged to establish Energy efficiency obligation scheme (EEO) and alternative policy measures. According to EZ-1, the promotion of energy efficiency measures and renewable energy sources is the obligation of the State and should be achieved through education, information and public awareness, with energy consulting, promotion of energy audits, preparation of regulations, financial incentives and other support programs (EZ-1, Article 314). In this respect, the Ministry for Energy determines the types of financial incentives for energy efficiency, district heating and RES, conditions and criteria for their allocation, the type of beneficiaries of incentives, and the incentives themselves (state aid, incentives granted under the "de minimis", and other financial incentives) (EZ-1, Article 316).

In EZ-1, a scheme of compulsory end-use energy savings by companies that sell energy (they must make energy savings of 1.5 % every year in relation to the average sales achieved between 2010 and 2012 as set forward by EED) is established. Energy suppliers will have to make savings at the energy-consumer level, encouraging them to undertake different energy-saving measures, e.g. by replacing old household electrical appliances, using energy-saving lightbulbs and insulating buildings. The method, however, by which the measures are financed, is not specified. This means that the costs of implementing the scheme are passed to the energy-selling companies themselves; on the other hand, these companies have greater flexibility in the method of implementation itself and in the financing of measures to increase energy efficiency.

However, instead of achieving energy savings via final customers as set forward by EZ-1, Article 318, liable entities may meet their obligations by remitting funds to the Eco Fund in an amount equal to the total savings that should have been achieved by final customers and the Eco Fund's specific cost of achieving the energy savings. In this respect, EZ-1 provides the legal basis for a Decree on energy savings requirements<sup>10</sup> which furthermore determines the period and the amount of energy savings, the method for calculating the energy savings, the distribution of energy savings through the years of a certain period, the manner and the deadlines

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<sup>8</sup> EZ-1 includes provisions of EPBD recast, which are not included in Construction Act.

<sup>9</sup> Uredba o upravljanju z energijo v javnem sektorju.

<sup>10</sup> Uredba o zagotavljanju prihrankov energije.

for the fulfilment of the obligation to achieve energy savings and the types of energy services and measures to achieve energy savings (Decree on energy savings requirements, Article 1). The methods for determining energy savings achieved through individual measures to improve energy efficiency to achieve the obligations of Article 318 of the Energy Act are furthermore determined by Rules on the methods for determining energy savings.<sup>11</sup>

Moreover, under EED, Article 8, Slovenia is obliged to establish energy audits and energy management systems. EZ-1 defines in detail the introduction of energy management systems and the implementation of energy audits (EA) as set forward by EED, Article 8. Under EZ-1, energy management systems must be established by public sector entities (EZ-1, Article 324). Liable entities and the minimum components of an energy management system are being determined the aforementioned Decree on energy management in the public sector. The tasks connected with the setting-up and implementation of an energy management system may be conducted by local energy organisations (EZ-1, Article 325). With regard to energy audits, the EZ-1 prescribes that the ministry, responsible for energy, should encourage the production and implementation of energy audits and determines that the minister, responsible for energy, should encourage the production and implementation of energy audits and prescribe a detailed methodology for the production of energy audits and the elements that an EA must contain (EZ-1, Article 354). Regulation on energy audits therefore includes the methodology for the preparation, minimum requirements and mandatory content of the energy audit of buildings, transport processes and end-customers (Regulation on energy audits, Article 1). Large companies must conduct EA every four years, with implementation of this obligation being monitored by the Energy Agency (EZ-1, Article 354).

Furthermore EZ-1 provides mandatory provisions regarding energy certification scheme. Energy Performance Certificate under EZ-1 has to include reference values to allow the comparison and assessment of the energy efficiency of buildings. An integral part of the energy performance certificate, recommendations for cost-effective energy efficiency improvements have to be included, except for new buildings and for leased buildings (EZ-1, Article 333, par. 1). The validity of the energy performance certificate is ten years and a new one has to be renewed prior to the expiration (EZ-1, Article 333, par. 2). A building or a particular part of the building can only have one valid energy performance certificate (EZ-1, Article 333, par. 3). If an energy performance certificate is issued for a part of the building in an apartment building, it shall be valid throughout the building as a whole (EZ-1, Article 333, par. 4). The energy performance certificate has to be issued by an authorized legal or natural person (EZ-1, Article 333, par. 5.; EZ-1, Article 339) in accordance with the Rules on the training, accreditation and register of accredited independent experts for energy performance certificate production.<sup>12</sup> On the basis of EZ-1, Article 68, a Decree has been set forward, which determines the maximum prices for issuing energy performance certificates.<sup>13</sup>

The methodology for calculating the energy performance of buildings on the national level, taking into account cost-optimal levels to be set for the minimum energy performance requirements for building elements is prescribed by the Ministry of Energy (EZ-1, Article 350). The content and form of the energy performance certificate, the methodology to produce and issue energy performance certificates and data content, the method of keeping the register of energy performance certificates and the method of registration of the issued energy certificate, together with more detailed content, format, methodology and deadlines for the control of energy performance certificates can be found in Rules on the methodology for the production and issuance of energy performance certificates for buildings.<sup>14</sup>

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<sup>11</sup> Pravilnik o metodah za določanje prihrankov energije.

<sup>12</sup> Pravilnik o usposabljanju, licencah in registru licenc neodvisnih strokovnjakov za izdelavo energetskih izkaznic.

<sup>13</sup> Uredba o določitvi najvišjih cen za izdajo energetske izkaznice.

<sup>14</sup> Pravilnik o metodologiji izdelave in izdaji energetskih izkaznic stavb.

Energy metering and billing are defined in the EZ-1 in accordance with Directives 2009/72/EC<sup>15</sup> and 2009/73/EC<sup>16</sup> and the EED. Articles 355 to 358 of the Energy Act regulate the areas laid down by the EED for energy metering (Article 9), billing information (Article 10) and the cost of access to metering and billing information (Article 11). For instance, Article 357 of EZ-1 on mandatory metering of heat in individual parts of buildings outlines the area of the metering and billing of heat in individual parts of buildings supplied from the district heating network or from a central source. The method used to measure heat and the method of dividing and calculating heating costs in multi-apartment and other buildings with at least four separate sections are laid down in the Rules on dividing and billing heating costs in multiple-dwelling and other buildings with several units.<sup>17</sup> Furthermore, Article 355 of EZ-1 on mandatory energy metering and billing sets forward an obligation that the operator and distributor of energy from the grid must measure energy supplied to each client. Also, in accordance with Article 358, the suppliers of energy and fuel networks need to provide billing information to final customers in clear and understandable terms.

The provisions of EZ-1 are also specially dedicated to consumer information and empowering programmes, as set forward by EED, Article 12. Articles 351 to 353 of EZ-1 refer to information and training programmes. According to Article 351 of EZ-1, information, training and awareness-raising programmes for different target groups are carried out by the Support Centre (Trajnostna energija, 2017). Furthermore, it is an obligation of the Eco Fund to organize and manage Energy counselling for residents by a network of advice offices (EZ-1, Article 352). Providers of energy advice for residents should provide information and consultancy in the field of buildings and households (EZ-1, Article 353). Providers of energy advice for residents should be independent experts, that have completed training for independent experts to produce energy performance certificates referred to in Article 345 of EZ-1, and have a valid license from an independent expert to produce energy performance certificates referred to in Article 341 of EZ-1. EZ-1 also lays down the mandatory acquisition of a licence for independent specialists who produce energy performance certificates or perform audits of air-conditioning or heating systems (EZ-1, Article 341). Training programmes for independent specialists are laid down by the Ministry of Energy, with the responsibility to maintain a register of licences of independent specialists and conduct expert monitoring of energy performance certificates and audit reports.

In accordance with EED, Article 13, EZ-1 imposes fines on those entities that fail to achieve savings or fail to remit funds to the Eco Fund for implementation of the programme to increase energy efficiency. The Energy Act also specifies fines for those that fail to report to the Energy Agency in accordance with the provisions of the act (EZ-1, Article 407). The fines are specified in a range that means that they can be imposed in proportion to the gravity of the infringement.

Furthermore, EZ-1 introduces incentives for efficient heating and cooling in accordance with EED, Article 14. For instance, according to Article 360 of EZ-1, a comprehensive assessment of the possibilities for the use of high-efficiency cogeneration and efficient district heating and cooling and cost-benefit analysis is mandatory every five years. Moreover, for each of the type of generating plants with a cogeneration, the manner of determining and calculating the efficiency of cogeneration with high efficiency method has to be prescribed, for calculating the amount of electricity from cogeneration together with the method of calculating the savings in primary cogeneration with high efficiency (EZ-1, Article 363). EZ-1 also includes mandatory provisions on professional training for installers of RES devices (EZ-1, Article 359) and mandatory assessment of the potential for efficient district heating and cooling (EZ-1, Article 364). In this respect, for instance Rules on

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<sup>15</sup> Directive 2009/72/EC of the European Parliament and of the Council of 13 July 2009 concerning common rules for the internal market in electricity and repealing Directive 2003/54/EC. OJ L 211, 14.08.2009, p. 55.

<sup>16</sup> Directive 2009/73/EC of the European Parliament and of the Council of 13 July 2009 concerning common rules for the internal market in natural gas and repealing Directive 2003/55/EC. OJ L 211, 14.08.2009, p. 94.

<sup>17</sup> Pravilnik o načinu delitve in obračunu stroškov za toploto v stanovanjskih in drugih stavbah z več posameznimi deli.

issuing energy permits<sup>18</sup> and Rules on support for electricity generated from renewable energy sources and from high-efficiency cogeneration<sup>19</sup> are laid down.

As regards to EED, Article 15 on energy transformation, transmission and distribution, EZ-1 sets forward provisions on development plans of operators in other operators in the energy sector (EZ-1, Article 30). Furthermore, electricity/natural gas companies need to ensure maximum energy efficiency in accordance with the recommendations of the Energy Agency to optimize the power/natural gas consumption in particular by offering management services to electricity consumption, by developing innovative pricing formulas, and with the introduction of advanced metering systems or networks where appropriate (EZ-1, Article 43 and 164). Grid operator has to inform investors in generating plants for the production of electricity from renewable sources or in production facilities with high-efficiency cogeneration with the comprehensive and necessary information, including a comprehensive and detailed analysis of the costs associated with the connection to the grid, a reasonable and accurate timing for receiving and processing the request for connection to the network and a reasonable indicative timetable for any proposed grid connection (EZ-1, Article 371). In this respect, detail regulation is set forward by Act on the methodology determining the regulatory framework and network charge for the electricity distribution system.<sup>20</sup>

As regards to EED Article 16, EZ-1 sets forward mandatory provisions on compulsory measurement of heat in certain parts of buildings in apartment buildings and other buildings with at least four individual parts that are supplied with heat from a common system of heating costs for heating and hot water accounted for the most part based on the actual heat consumption. The owners of individual parts of the building have to install measuring devices, which allow indication of the actual heat consumption of each part of the building (EZ-1, Article 357).

In accordance with EED, Article 17, the Support centre prepares and implements programs for information, education and training of various target groups about the benefits and practicalities of developing and using technologies for energy efficiency and use of renewable energy sources (EZ-1, Article 351). The Support centre also cooperates with local authorities on the preparation and implementation of programs in the local community.

Article 319 of EZ-1 sets forward provisions on the types of energy services and measures to improve energy efficiency in accordance with EED, Article 18. The types of energy services and measures to improve energy efficiency by achieving energy savings, should be in particular efficiency measures and greater use of renewable energy sources in heat production and in the public service sector and industry and households, energy efficiency measures in buildings and transport, measures to increase the efficiency of district heating systems and software implementation of energy audits (EZ-1, Article 319).

Other measures to promote energy efficiency in accordance with EED, Article 19 include the aforementioned Long-Term Strategy for Mobilising Investments in the Energy Renovation of Buildings (EZ-1, Article 348) and National Action plan for energy efficiency for the period of 2017-2020 (EZ-1, Article 27; Ministry of Infrastructure, 2015).

The aforementioned provisions of Article 314, 316 and 317 EZ-1 on Energy Efficiency National Fund, Financing and Technical Support fulfil the obligations set forward by EED, Article 20.

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<sup>18</sup> Pravilnik o izdaji energetskega dovoljenja.

<sup>19</sup> Uredba o podporah elektriki, proizvedeni iz obnovljivih virov energije in v sproizvodnji toplote in elektrike z visokim izkoristkom.

<sup>20</sup> Akt o metodologiji za določitev regulativnega okvira in metodologiji za obračunavanje omrežnine za elektrooperaterje.

In Article 378 of EZ-1 mandatory provisions for determination of contributions to encourage the production of electricity from renewable energy sources into high-efficiency cogeneration in their consumption are laid down. The Decree on the method of determining and calculating the contribution for ensuring support for the production of electricity from high-efficiency cogeneration and renewable energy sources<sup>21</sup> establishes the method of calculation and accounting of contributions to the provision of support for the production of electricity from high efficiency cogeneration and renewable energy sources according to EED, Article 21.

Moreover, in the area of planning and decision making the EZ-1 defines the Energy concept of Slovenia as a short document containing key strategic development directions for 40 years, which will replace the current National Energy Program (EZ-1, Article 23).

In Slovenia, the EPBD recast is transposed into national legislation by the Construction Act (ZGO-1)<sup>22</sup>. ZGO-1 among others, regulates the conditions for the construction of all facilities, provides the essential requirements and provisions to comply with them as regards to the characteristics of objects, regulates inspection supervision, establishes sanctions for violations which are in the field of construction and regulates other issues related to the construction of buildings (ZGO-1, Article 1). ZGO-1 also gives a legal basis for Rules on efficient use of energy in buildings, which include minimum energy performance requirements for new energy-efficient buildings and, if relevant, existing buildings upon major renovations and maintenance works, as well as the calculation methodology.

Rules on efficient use of energy in buildings (PURES 2010)<sup>23</sup> set out the technical requirements that must be met for efficient use of energy in buildings in the area of thermal insulation, heating, cooling, ventilation or a combination of hot water and lighting in buildings, providing its own renewable energy for the operation of the systems in the building and methodology for calculating the energy performance of buildings in accordance with EPBD recast (PURES 2010, Article 1). According to PURES 2010, a building should be designed and built in such a way that it is properly oriented in an energy sense, that the ratio between the surface of the thermal envelope of the building and its conditioned volume with an energy point of view is favourable, that the spaces in the building are optimally arranged from energy point of view, and that the materials, construction and the entire outer surface of the building allow an efficient management of energy flows (PURES 2010, Article 8).

The achievement of energy efficiency in buildings by meeting the requirements of PURES 2010 is demonstrated in the study of building physics in the field of energy efficiency in buildings (PURES 2010, Article 17). A summary of EE calculations must be listed on the form "Statement of the energy performance of buildings" (PURES 2010, Article 19).

PURES 2010 includes a technical guideline, a document, which, for a certain type of structure, defines essential requirements, design conditions, the selected level or classes of construction products and materials that may be installed (ZGO-1, Article 2, par. 1). It also defines the mode of installation of materials and the way they work in order to ensure the reliability of the facility throughout its lifetime, as well as the procedures by which it is possible to determine whether such requirements are met (ZGO-1, Article 2, par. 1).

The legal nature and application of technical guidelines derive from ZGO-1, according to which the building regulations for individual types of facilities determine their technical characteristics according to their purpose of fulfilling one, several or all of the essential requirements, namely the mechanical resistance and stability, fire safety, hygiene and health protection and protection of the surroundings, safety in use, protection against noise, energy saving and heat retention (ZGO-1, Article 9). A Technical guideline TSG-1-004: 2010<sup>24</sup> on the efficient use of energy therefore provides building measures and solutions to meet the requirements of PURES 2010 and sets out the detailed methodology of calculation of the energy performance of the building (PURES 2010, Article 5). Using technical guidance is mandatory under Construction act and PURES 2010. Technical

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<sup>21</sup> Uredba o načinu določanja in obračunavanja prispevkov za zagotavljanje podpor proizvodnji električne energije v soproizvodnji z visokim izkoristkom in iz obnovljivih virov energije.

<sup>22</sup> Zakon o graditvi objektov (ZGO-1).

<sup>23</sup> Pravilnik o učinkoviti rabi energije v stavbah (PURES 2010).

<sup>24</sup> Tehnična smernica TSG - 1- 004:2010.

guideline TSG-1- 004:2010 includes some 377 equations for the calculation procedure and 51 SIST EN standards.

In accordance with EPBD recast, the provisions of PURES 2010 and TSG - 1- 004:2010 are used in the construction of new buildings and the reconstruction of the building or of the single part where it interferes with at least 25% of the surface of the thermal envelope, if it is technically feasible (PURES 2010, Article 2, par. 1). The provisions of PURES 2010 and TSG-1-004:2010 also apply in the case of a reconstruction of the building or of the single part where it interferes with less than 25% of the surface of the thermal envelope of the building or its elements, in the case of investment and other maintenance work, or if a building with a gross floor area of less than 50 m<sup>2</sup> is being build or reconstructed (PURES 2010, Article 2, par. 2).

To comply with PURES 2010 and TSG - 1- 004:2010 a building has to fulfill minimum requirements related to the maximum allowed specific transmission heat losses (HT) and maximum annual heat demand for space heating (Qnh). Residential buildings also have to fulfill maximum energy needs for cooling (Qnc) and maximum primary energy for the energy systems operation (Qp) (PURES 2010, Article 21). Public buildings have to comply with 10% stricter requirements.

Provisions regarding energy performance and energy use in buildings can also be found in, for instance Act Regulating the Technical Requirements for Products and the Conformity Assessment<sup>25</sup>, Decree amending the Decree on the introduction and application of uniform classification of facilities and on the designation of facilities of national importance<sup>26</sup>, Rules on the ventilation and air-conditioning of buildings<sup>27</sup>, Rules on design documentation<sup>28</sup>, Rules on fire safety in buildings<sup>29</sup>, Rules on the methodology of the elaboration and contents of alternative energy supply system feasibility studies for buildings<sup>30</sup>, Instructions and technical guidelines for energy renovation of public buildings<sup>31</sup> and Guidelines for the implementation of measures to improve the energy efficiency of buildings in the public sector according to the principle of energy contracting<sup>32</sup>.

The EPBD recast was also transposed into national legislation for instance by the Environmental Protection Act<sup>33</sup> in addressing the efficient use of energy (ZVO-1, Article 144 and 147) and Chimney Sweeping Services Act<sup>34</sup> in addressing the energy efficiency of small boilers through a review of compliance in accordance with regulations governing energy efficiency in buildings (ZDimS, Article 13).

## **5. IDENTIFIED REGULATORY BARRIERS FOR REDUCING ENERGY USE IN EXISTING BUILDINGS IN SLOVENIA**

To identify recommendations for Slovenia, an analysis of current national regulatory provisions have to be conducted. To understand the impact of existing regulatory incentives, this Chapter is dedicated to the determination of: which incentives have the largest potential for improvement for an increase of EE renovations in existing buildings and which areas should be prioritised for the development of adequate energy efficiency policies.

As presented before, in Slovenia, the provisions on energy efficiency in buildings are scattered through numerous legislation acts. Slovenian legislation regarding environment, energy and buildings comprises of more than of 700 legislative regulations (Ministry of justice and public administration, 2013, p. 14).

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<sup>25</sup> Zakon o tehničnih zahtevah za proizvode in o ugotavljanju skladnosti (ZTZPUS-1).

<sup>26</sup> Uredba o klasifikaciji vrst objektov in objektih državnega pomena.

<sup>27</sup> Pravilnik o prezračevanju in klimatizaciji stavb.

<sup>28</sup> Pravilnik o projektni dokumentaciji.

<sup>29</sup> Pravilnik o požarni varnosti v stavbah.

<sup>30</sup> Pravilnik o metodologiji izdelave in vsebini študije izvedljivosti alternativnih sistemov za oskrbo stavb z energijo.

<sup>31</sup> Navodila in tehnične usmeritve za energetske prenove javnih stavb, Ministry of Infrastructure, 2016a.

<sup>32</sup> Smernice za izvajanje ukrepov izboljšanja energetske učinkovitosti v stavbah javnega sektorja po principu energetskega pogodbeništva, Ministry of Infrastructure, 2014.

<sup>33</sup> Zakon o varstvu okolja (ZVO-1).

<sup>34</sup> Zakon o dimnikarskih storitvah (ZDimS).

Furthermore, a comprehensive Energy concept for Slovenia (EKS) has not yet been adopted and is being drafted since 2015. EKS is needed as the basic document on development in the energy sector, which, according to the Energy Act (EZ-1), will be based on projections of economic, environmental and social development of the country and on the accepted international obligations. EKS would set out the objectives of secure, sustainable and competitive energy supply over the next 20 years and a framework for 40 years.

Moreover, there is no binding general legislation for EPC in the public sector and the Act on the award of concession contracts and public-private partnerships in public sector<sup>35</sup> is currently still being drafted. There are, however, numerous important legal documents, that indirectly outlines EPC in the public sector such as instance Public Private Partnership Act, Public Procurement Act, Rules on the efficient use of energy in buildings and Guidelines for the implementation of measures to improve the energy efficiency of buildings in the public sector according to the principle of energy contracting.

Furthermore, systematic evaluation of national energy use is required in order to set appropriate regulatory provisions and to check and, if needed, correct the provisions set out. Systematic evaluation of national energy use requires high levels of ex-ante and ex-post evaluation of energy use in buildings and an evaluation of targets, set forward by the national strategic documents, together with an evaluation of performance of financial investments. However, there is very little systematic evaluation of energy use in buildings in Slovenia although constant monitoring of energy consumption is an important instrument for achieving EE targets and setting EE policies. Moreover, according to the provisions of the EZ-1, the Eco Fund should publish on its website an annual report on the scheme implemented, the energy savings achieved, the level of funds used for implementation of the scheme and the specific costs of achieving the savings (EZ-1, Article 317, par. 6).

The relevant data on the effects of Eco Fund subsidies is not available. Furthermore, the lack of information on specific sectoral distribution of the recipients of the subsidies and the lack of data on the mandatory final energy savings scheme, do not allow an accurate data of the savings achieved, which are therefore only estimated.

Moreover, in accordance with EED, Article 24, each MS is obliged to report on the progress achieved towards national energy efficiency targets, in accordance with Part 1 of Annex XIV by 30 April each year as from 2013. In the report on Slovenian NEEAP 3 for the year 2016, indicative targets have been presented. However, the indicative targets for 2016 were presented without an accompanying attachment of the appraisal to the estimates in cases where energy consumption has remained stable or has been growing as regards to previous years. Moreover, also the indicative targets for 2016 were presented without updates on major legislative and non-legislative measures implemented in the previous year, which could contribute towards the overall national energy efficiency targets for 2020 in accordance with EED, Annex XIV.

Furthermore, in accordance with EED, Article 24, each MS is obliged to submit their National Energy Efficiency Action Plans by 30 April 2014, and every three years thereafter. Slovenian National Energy Efficiency Action Plan for the period 2017-2020 (AN-URE 2020) has not been adopted yet nor presented to the EU and is currently in the process of public hearing.

In October 2015, Long-Term Strategy for Mobilising Investments in the Energy renovation of Buildings has been adopted in accordance with EED, Article 4. However, as this is the first version the required Strategy, it should be published by 30 April 2014 and updated every three years thereafter. Slovenia has not evaluated or updated it yet.

As regards to the calculation of cost-optimal levels of minimum energy performance requirements in accordance with EED, Article 5, Slovenia did present the required report in 2014. However, the first report should be submitted by 30 June 2012. Furthermore, until now, it has not been evaluated yet. Furthermore, in accordance with EED, Article 5, public authorities have to set an example by renovating 3% of the central government buildings annually. This objective has not been achieved in 2014 nor in 2015, especially due to delays in the implementation of the Operational program for the implementation of European cohesion policy

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<sup>35</sup> Zakon o podeljevanju koncesijskih pogodb in pogodb o javno-zasebnih partnerstvih (in preparation).



for the period 2014-2020. It is expected, that Slovenia will fail to fulfil this obligation also in 2016 (Ministry of Infrastructure, 2016b, p. 9).

Moreover, in accordance with EED, Article 7, Slovenia is obliged to establish an energy efficiency obligation scheme for final energy savings among final customers of suppliers of electricity, heat, gas, liquid and solid fuels to final customers (suppliers), as well as alternative measures, for which funding is provided by the Eco Fund through the collected contribution on energy use. The objective for 2014 in the context of EED, Article 7 and in accordance with NEEAP 3 has not been achieved. Energy savings under the EED, Article 7 amounted to 204.3 GWh in 2014, namely the suppliers 66.3 GWh and Eco Fund 138 GWh and accounted for only 58.5% target, which was 349 GWh of final energy consumption (Ministry of Infrastructure, 2016b, p. 9). Furthermore, in 2015, final energy savings, achieved through the Eco Fund alternative measures have declined and amounted to 102.3 GWh. However, final energy savings, achieved under the scheme for suppliers increased and amounted to 502.3 GWh. Under this scheme, suppliers were obliged to reach 125.7 GWh of savings in 2015. The surplus of savings will be used to meet their obligations over the next three years (Ministry of Infrastructure, 2016b, p. 9). Since the final energy savings, achieved through the alternative measures lagged behind the targeted objective in 2015 and excess savings of suppliers are expected to be transferred to the following year, the total amount of final energy saving in 2015 amounted to 228 GWh. The overall objective of the NEEAP 3 for 2015, amounting to 349 GWh of final energy savings, has not been achieved.

With the introduction of EZ-1 in 2014, Slovenia has argued that it has fully transposed the third energy package of the EU regulation. However, there is a need for implementing amendments to the EZ-1 due to non-compliance with existing EU legislation. In 2016, the European Commission has conducted an ex officio investigation with regards to the proper implementation and the application of the provisions of EPBD recast in Slovenia, with a view to assess potential non-compliance with EU legislation. European Commission has argued an incorrect transposition of the EPBD recast Article 13, par. 2, which sets the obligation that the energy certificate has to be issued in accordance with the EPBD recast Article 12, par. 1 for buildings with the total usable floor area above 250 m<sup>2</sup> is frequently visited by the public in a prominent place that is clearly visible to the public.<sup>36</sup>

The current EZ-1 only provides provisions that in buildings with a total useful floor area over 250 m<sup>2</sup>, which are owned or operated by the public sector, a valid building energy performance certificate has to be placed in a conspicuous place (EZ-1, Article 336, par. 1). In order to ensure the fulfilment of the obligations under EPBD recast, the amendment of EZ-1 is needed, however, it has not been amended yet.

Slovenia also failed to fulfil obligations under the EED, Article 14, par. 1, which obliges MS to prepare a comprehensive assessment of the potential for high-efficiency cogeneration and efficient district heating and cooling by 31<sup>st</sup> December 2015, which lead to the infringement of the EED and EZ-1, Article 532. Slovenian has fulfilled this obligation more than two years later, in April 2017 (Ministry of Infrastructure, 2017c).

Furthermore, Guidelines on State aid for environmental protection and energy for the period 2014 -2020<sup>37</sup> stipulates that an assistance to incentivise the market integration of electricity from renewable sources can only be granted as a premium addition to the market prices, if the power production capacity is 500 kW or more (Guidelines on State aid for environmental protection and energy 2014-2020, Section 125). In 2016, Slovenia received warnings by the European Commission as the provisions of EZ-1 provide that support is carried out as a guaranteed purchase of electricity for plants with a rated electrical output of less than 1 MW (EZ-1, Article 372, par. 6). In order to ensure the fulfilment of the obligations under Guidelines on State aid for environmental protection and energy for the period 2014 -2020, the amendment of EZ-1 is needed, however, it has not been amended yet.

Under the EZ-1, the responsibility for complying with energy performance certificates provisions lays on the Energy inspectorate (EZ-1, Article 451). With regard to inspection of the energy performance certificates, an

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<sup>36</sup> The threshold was lowered from 500m<sup>2</sup> as of 9<sup>th</sup> July 2015.

<sup>37</sup> Guidelines on State aid for environmental protection and energy 2014-2020 (2014/C 200/01). OJ C 200, 28.6.2014, p. 1-55.

energy inspector is obliged to conduct the supervision of energy performance certificates and report on the review of air conditioning and heating systems no later than five months from the received request for inspection (EZ-1, Article 461). Moreover, under the Rules on the methodology for the production and issuance of energy performance certificates for buildings, professional supervision of the energy performance certificates issued should be carried out on a statistically significant proportion of the certificates and a plan should be issued annually by the Ministry responsible for energy by 31 March of the current year (Rules on the methodology for the production and issuance of energy performance certificates for buildings, Article 20, par. 2). No supervising activities were conducted in 2016 by the Energy inspectorate (Ministry of Infrastructure, 2017d). In October 2016, the Inspectorate of Environment and Spatial Planning was given the power for the supervision of energy performance certificates and the review of air conditioning and heating systems. With regards to the control of energy performance certificates in accordance with EZ-1, Article 461, the Inspectorate of the Environment and Spatial Planning has not conducted any supervisions, address any issues or impose any measures in 2016 (Ministry of the Environment and Spatial Planning, 2017, p. 17).

Moreover, under the EZ-1, the Inspectorate for the Environment and Spatial Planning can conduct supervision regarding energy performance certificates in cases where during the process of professional supervision, the ministry, responsible for energy, questions the accuracy of the energy performance certificate or the inspection report (EZ-1, Article 347). In 2016, only four such initiatives for supervision of energy performance certificates were received and inspection procedures are still ongoing (Ministry of the Environment and Spatial Planning, 2017, p. 17).

In 2016, the Building inspectorate (a part of the Inspectorate for the Environment and Spatial Planning) conducted a coordinated action on construction sites over the incorporation of construction products in the entire territory of the Republic of Slovenia. The objective of the campaign was to determine whether installed construction products comply with the ZGO-1, Article 83, Construction Products Act (ZGPro-1)<sup>38</sup> and EU Regulation No. 305/2011.<sup>39</sup>

Subject to supervision were steel parts and assemblies, facade assemblies, doors and windows. The supervision was focused on whether the product has a built-in CE marking or the declaration of performance, if the product installed actually corresponds to the accompanying declaration of performance, whether the statements relate to the valid and appropriate technical specification (SIST EN, ETA, STS), if the certificate of performance of the product (i.e. the Certificate of conformity of the factory production control) is valid, if the actual intended use complies with the written statement, if the product corresponds to the design requirements and whether the declaration of the products properties is complete.

As regards to doors and windows, 67 products were reviewed and inspectors found nine administrative irregularities. The irregularities refer to insufficient CE mark (missing data) and missing declaration of performance (Poročilo o delu za leto 2016, 2017, p. 25). As regards to the facade assemblies, 41 products were reviewed, 11 of them as complete façade sets and the remaining 30 were single products. In some individual buildings, there were no instructions on how the products should be built in the façade set (Poročilo o delu za leto 2016, 2017, p. 26). In these cases, the execution and the choice of materials is left to the contractor.

Regarding building products, it can be ascertained, that many manufacturers are not sufficiently familiar with the requirements for placing their product on the market. A lot of projects are ill-defined or do not determine the type of the façade assembly, therefore, the choice of the materials and the installation is left to the contractor. In the renovation projects, there are no binding requirements to achieve high-quality façade sets. In addition, if the choice of type of the façade is left to the contractor, quality control and suitability are usually not provided. In these cases, building inspectors cannot act, despite the apparently uncontrollable quality.

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<sup>38</sup> Zakon o gradbenih proizvodih (ZGPro-1).

<sup>39</sup> Regulation (EU) No 305/2011 of the European Parliament and of the Council of 9 March 2011 laying down harmonized conditions for the marketing of construction products and repealing Council Directive 89/106/EEC (Text with EEA relevance). OJ L 88, 4.4.2011, p. 5-43.

## **6. RECOMMENDATIONS FOR INCREASED INVESTMENTS IN EE RENOVATIONS OF EXISTING BUILDINGS IN SLOVENIA**

As presented in previously, specific regulatory instruments have been implemented at national level with the aim of stimulating energy efficiency related measures in existing buildings. However, in Slovenia, improvements of regulatory incentives could be made, which should result in (more) stimulating policies for EE investments in existing buildings. The presented recommendations were substantiated on the basis of the research findings of the conducted analysis of national regulatory provisions and successful EE regulatory incentives, implemented in EU Member States.

As a Member of the EU, Slovenia has an obligation to fully implement the regulation on EE in national legislation. However, it lacks a holistic approach to EE as provisions are scattered through numerous legislation acts and different Ministries. Furthermore, a comprehensive Energy concept and renovation map, together with some key legislation acts are still missing. Therefore, Slovenia should, as a regulatory push, consider a holistic approach for increasing energy efficiency in existing buildings based on a strategic framework for reducing energy use. In this respect, a comprehensive and detailed Energy concept as well as building renovation roadmap is needed, together with mandatory provisions regarding EE renovations of existing buildings within a specific timeframe, in case of change of building use or new building extensions. There is also a lack of binding general legislation for EPC in Slovenia. With regard to energy audits, the EZ-1 sets forward that the ministry, responsible for energy, should encourage the production and implementation of energy audits (EA) (EZ-1, Article 354, par 1), although it does not determine how this should be done.

As an example, Denmark's policy for increased energy efficiency based on a strategic framework for reducing energy use in existing buildings, is highlighted. In this respect, a comprehensive and detailed building renovation roadmap exists in Denmark, based on a detailed description of the building stock. The basis for the renovation map are statistical extracts from the Danish Energy Agency's database of building data from the energy labelling scheme for buildings. This database contains data on around 300 000 buildings, together with (Klima-, Energi- og Bygningsministeriet, 2014):

- a detailed analysis of energy renovation,
- a description of the building stock in which the buildings are broken down according to usage category and construction period,
- energy condition of the building stock is described through a breakdown of ceilings, external walls, floors, ground slabs, and windows in the existing buildings by U-values,
- cost-effective approaches to renovations relevant to the building type and climatic zone,
- policies and measures for stimulating cost-effective comprehensive renovations of buildings, including staged renovations,
- long term investment guidelines for individuals, the construction industry and financial institutions and
- evidence-based estimate of expected energy savings and wider benefits.

Moreover, in some EU Member States, mandatory EE renovations of existing buildings are required within a specific timeframe, in case of change of building use or building extensions. Moreover, in the UK, prohibition for renting out or selling of a building with poor energy performance is set forward.

In Germany, for instance, the Energy Saving Ordinance (Energieeinsparverordnung-EnEV) contains renovation obligations, which must be fulfilled by building owners within a specific timeframe. Among others, the provisions set obligations regarding insulation by which ceilings on top floors that do not comply with minimum thermal insulation requirements ( $U\text{-Value} \leq 0.24 \text{ W/m}^2$ ) must be insulated until the end of 2015 (EnEV, Article 10, para. 3). Furthermore, hot water pipes and cooling distribution systems must be insulated until the end of 2015 (EnEV, Article 10, para. 2). Moreover, oil and gas boilers installed before 1985 will have to be de-commissioned as of 2015 and heating systems installed after 1 January 1985 must be replaced after 30 years. If the building is sold, the new owner must comply with the obligation within a period

of two years (EnEV, Article 10, para. 1). However, these provisions are subject to the precondition of cost-effectiveness.

In France, for instance, the Energy Transition Law of Green Growth (Projet de loi sur la transition énergétique pour la croissance verte, approved in August 2015) sets forward a renovation obligation for private residential buildings with primary energy consumption exceeding 330 kWh/m<sup>2</sup>/y or with an energy performance rating in F or G. These buildings, including rented and owner-occupied, will have to be renovated before 2025 (Ministry of Ecology, Sustainable Development and Energy, 2016, p. 18). However, it is presumed that 10% of the existing buildings, affected by the Law will be exempted due to technical impossibility regarding renovation (not suitable for exterior insulation materials or difficult access) or due to low income of homeowners which will not be able to afford the renovation (BPIE, 2015, p. 10).

Moreover, in Danish Building Regulation (2010), minimum energy requirements for building components in case of change of a building use are established (Danish Building Regulation, Section 7.3). A change of building use are cases of conversion of an outbuilding to accommodation, or conversion of usable roof space to accommodation (Danish Building Regulation, p. 26). However, construction factors may prevent full compliance with U-values. Moreover, structural alterations that even increase energy consumption may be carried out. Thus, compensatory energy savings have to be made in both instances. The reduced energy performance is compensated, for example, with extra insulation, solar heating, a heat pump or solar photovoltaic cells (Danish Building Regulation, Section 7.3.2).

Furthermore, in Italy, various regions and cities have introduced mandatory building performance upgrades in case the owner is extending the building. For instance, in Autonomous Province of Bolzano building owners will be allowed to expand the dwelling to up to 20%, or up to 200m<sup>2</sup>, only if the building achieves heating consumption below 70kWh/m<sup>2</sup>/y as of 2020. Furthermore, in region of Valle D'Aosta, in case of expansion of a building by 20% with a floor area more than 2000m<sup>2</sup>, the energy performance of the building must comply with the local energy class B level ( $\leq 50\text{kWh/m}^2/\text{y}$  for heating). Also in Trento province, for an expansion of the building up to 30%, the minimum energy performance requirement is energy class B+.

In the UK, a prohibition for renting out or sale of a building unit with poor energy efficiency will be set as of April 2018. Almost 10% of the 4.2 million privately rented homes in England and Wales currently fall below the E rating, therefore tenants pay excessive costs for heating due to poorly insulated homes.

Therefore, private owners of residential and non-residential properties will only be allowed to rent their properties either by improving building's rating to at least energy class E or carrying out the maximum package of measures funded under Green Deal<sup>40</sup> and Energy Company Obligation schemes or other financial programs for EE (Private Rented Sector Energy Efficiency Regulations (Domestic), p. 7). Furthermore, as of April 2016, owners of residential properties cannot refuse energy efficiency improvements at the requests from their tenants, where financial support is available (Private Rented Sector Energy Efficiency Regulations (Domestic), p. 5-6).

The tenant has to specify and provide details for the proposed EE measures as well as provide evidence to the landlord that the proposed measures could be fully funded through appropriate schemes (Private Rented Sector Energy Efficiency Regulations (Domestic), p. 5). Landlords can propose other EE measures as long as they deliver the same energy savings as specified in the tenant's request. In line with better regulation guidance, there is also a requirement to review the operation and effect of these regulations in five-year intervals (Private Rented Sector Energy Efficiency Regulations (Domestic), p. 9).

Also in Belgium, minimum requirements for roof insulation in residential buildings when the building is to be rented out were put into force in 2015 (Wonen-Vlaanderen, 2017). If a residential building does not comply with the minimum requirements (an insulation of R-value of 0.75 m<sup>2</sup>K/W or U-Value of 1.3 W/m<sup>2</sup>K), it receives penalty points. By receiving more than 15 penalty points, it will be illegal to rent it out. In an

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<sup>40</sup> On 23rd July 2015, the UK Government announced that it will cease funding the Green Deal, but that it will work with the building industry and consumer groups on a new value-for-money approach.

apartment building, all apartments are penalized, not only the apartments that are located immediately under the roof. Possible sanctions do not apply if the owner occupies the house. Furthermore, from 2020 onwards, should the floor insulation fail to meet the specified minimum requirements, then the building will be characterized directly as ineligible for renting.

As regards to EPC, a support environment for implementing energy performance contracting measures through decisive legal regulation of this field has to be established in Slovenia. These could include mandatory provisions on contractual assurance of energy savings and contractual assurance of cost-effective final energy supply as well as standardized contracts and energy performance contracting protocols. Furthermore, the methodology for carrying out energy audits in the public sector could be supplemented in a way, so that it would better support the preparation of tenders for EPC.

In Slovenia, regular reviews of the NEEAPs on a national level are needed together with an annual report on the implemented Eco Fund and other financial schemes, that have been implemented on a national level in order to achieve EE targets.

In Slovenia, amendments of EZ-1 are needed for the elimination of certain alleged offenses by the European Commission, for not adopting the national measures necessary for the harmonization of national legislation with EU legislation. Furthermore, as presented in previously, in Slovenia, there is a problem of achieving the overall objectives, set forward by NEEAP (together with mandatory reports) as well as problems with delays in the implementation of the Operational program for the implementation of European cohesion policy and some key regulation on, for instance, EPC.

Moreover, under the Rules on the methodology for the production and issuance of energy performance certificates for buildings, professional supervision of the energy performance certificates issued should be carried out on a statistically significant proportion of the certificates and a plan should be issued annually by the Ministry responsible for energy by 31 March of the current year (Rules on the methodology for the production and issuance of energy performance certificates for buildings, Article 20, par. 2). No supervising activities were conducted in 2016 by the Energy inspectorate (Ministry of Infrastructure, 2017d).

To clarify whether overall energy targets and energy requirements regarding EE in existing buildings are met, it is essential to apply constant checks of regulatory and financial instruments, as well as strict control of compliance with national provisions through measuring the insulation and air tightness of the building. Therefore, increased oversight activities of national authorities (competent ministries, inspectorates, municipalities) is needed. Also, strict control of building projects, that have received financial support for EE investments, is needed after the implementation of the EE measures together with applying penalties in case of non-compliance.

## **7. CONCLUSION**

Energy is a key component in the generation of wealth and an essential global commodity. It is therefore a significant component in economic development and it has to be taken into account in assuring sustainable socio-economic development.

The importance of energy efficiency in existing buildings arises from the concept of sustainable development, not only due to the fact of meeting the needs of the present without compromising the ability of future generations to meet their own needs (World Commission on Environment and Development., 1987, p. 16) but also to ensure that no dimensions, resources or policy tools are overlooked by using a holistic approach, namely inclusion of energy efficiency as an integral part of holistic development planning and co-operation development and coordination of energy-related policies in all domains through sustainable development strategies.

EE renovation of a huge amount of European buildings is proven to be beneficial not only for reducing or eliminating fuel poverty and improving energy security, together with all environmental and other benefits identified. Furthermore, renovation of existing building is expected to have a consistent impact on

employment both directly, by the creation of many new jobs in the construction industry, and indirectly on all the sector related services. Therefore, ambitious major renovation programmes have the capacity to help the entire economic process, while they are also recognized as an effective way to foster research and innovation activities.

Regulatory push increases the efficiency of instruments for applying energy efficiency measures in existing buildings as legal requirements are one of the three pillars and a key to a successful energy transition to energy efficiency while, as identified before, landlords and tenants, when regarding EE measures, do often not implement them, regardless of them being profitable and are thus defying conventional economic logic.

Existing Slovenian regulations could have limited impact on energy efficiency in existing buildings as in Slovenia, the provisions on energy efficiency in buildings are scattered through numerous legislation acts and some key regulatory provisions and national strategic documents are still missing. Furthermore, also potential non-compliance with existing EU legislation could have a profound impact on existing EE policies in Slovenia.

Therefore, in Slovenia improvements of regulatory provisions could be made, which should result in (more) stimulating policies for EE investments in existing buildings. Slovenia should consider adopting a comprehensive and detailed building renovation roadmap as well as provisions on mandatory EE renovations of existing buildings within a specific timeframe, in case of change of building use or building extensions. Moreover, a prohibition for renting out or selling of a building with poor energy performance could be set forward.

Additionally, to clarify whether overall energy targets and energy requirements regarding EE in existing buildings are met, it is essential to apply constant checks of regulatory instruments, as well as strict control of compliance with national provisions through measuring the insulation and air tightness of the building. Therefore, increased oversight activities of national authorities (competent ministries, inspectorates, municipalities) is needed.

The above listed could have a positive impact on employment and GDP and help to reduce or eliminate fuel poverty, improve energy security, together with all environmental and other benefits identified.

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# **Value creation for User and Owner of buildings in the long user phase status so far in OSCAR project**

Anne Kathrine Larssen  
Svein Bjørberg  
Hallgrim Hjelmbrække  
Multiconsult ASA, Norway

E-mail: anne.kathrine.larssen@multiconsult.no

E-mail: svein.bjoerberg@multiconsult.no

E-mail: hallgrim.hjelmbrække@multiconsult.no

## **Abstract**

The objective of the paper is to present parts of the findings from research project “Oscar – Value for User and Owner of Buildings” which is going to be finished in January 2018. The main intention of Oscar is to develop competences, methods and analysis tools bringing criteria for value strategy, decided in early design, as base contribution to value creation for owner and end-user throughout lifetime, the bridge (Oscar Bridge) from early phase design to the long user phase. This paper presents Oscar project’s findings so far regarding main pillars at both end of the Oscar Bridge. The methodology, both qualitative and quantitative research methods, is used. Different approaches such as literature review, case studies, questionnaire interviews, survey and workshops has been applied for collecting data through several work groups, master -, bachelor - and also part of phd thesis. Focus in this research has been on Hospitals -, Office - and University buildings. The results reveal that it is of high necessity to get a stronger owner governance to bring value strategy and goals throughout execution process until delivery. Outcome (effect) of delivery has to be measured regardless which kind of execution process (-model) used. The research also shows the potential for improvements in different processes during the project like user involvement, regulations and decision-making. The results of the studies will contribute to better understanding on how to bring project value strategy to a measurable means from delivery of building and hence a better quality in to user phase. The research is important to increase the understanding of value creation for owner’s and user’s perspective.

**Keywords:** Value creation, Early design phase, Owner governance, Lifetime, Delivery outcome

## 1. INTRODUCTION

The Oscar research project was established in 2014 and will be finished in January 2018. The main intention of Oscar is to develop competences, methods and analysis tools for optimization of building design. An important element of the initial phase is to establish design criteria which are in accordance with the project objectives and the strategy of the project owner. Those design criteria should be the guideline for the design and project development in the following phases safeguarding value creation for owner and end-user throughout lifetime and be the bridge (Oscar Bridge) bringing decision of value creation from early phase design to obtain long term outcome in use phase. From earlier research (Larssen, 2011) we know there is coherence between how we design and how we operate, maintain and enhance our buildings and what values the building (space and infrastructure, people and organization) create for those using, managing and owning the space.

Based on empirical data from strategic analyses, development planning and feasibility studies for building portfolios, both in public and private sectors BJORBERG et al. 2012 it was found that the scope of unfortunate technical solutions, detailed design and materials are remarkably large, even within new buildings. This leads to unnecessarily high operating - and maintenance cost, increased replacement rate and negative impact on core business, in terms of disruption and in the worst cases HSE (Health, Safety, Environment) related issues. A large proportion of the buildings, 31% (Larssen and BJORBERG, 2013), is evidenced as ill-suited, inefficient in use seen from an operational level (poor usability) and any refurbishment is too expensive. These factors substantially reduce the functional life of the buildings. What is the most striking fact is that this life span decrease occurs frequently in relatively new buildings. All this will influence on the value creation process throughout design and construction period, which is a short part of project total lifetime. In the long part of lifetime, the users are stuck with the project and the resulting outcome.

Value for the project owner, the client, will be a part of the project strategy and must be communicated to the stakeholders. HJELMBREKKE et al. (2015) concludes that many projects become a motherless child due to three perspectives; i) client does not manage to translate his strategy into tangible project requirements, ii) project team are torn between loyalties throughout project period and iii) user requirements rarely comes to prevail.

BJORBERG et al. (2015) concluded to ensure that the project will develop effective solutions, which delivers value in use phase, it is essential that the solutions should be based on extended knowledge of core business activities, physical environment as well as taking consideration for future changes (technical or social). In the dialogue with the client, the design team should be able to ask the right questions in terms of what are regarded as important for the value creation. Better understanding of the value principles leads us to optimize the building design to contribute to value creation through the whole Life Cycle (LC) of the building and thereof Life Cycle Cost (LCC). Cost for OSCAR is a combination of the investment cost, the facility management costs and the core business's costs relating to use of the building.

## 2. APPROACH

«A fool is a man who knows the price of everything, but the value of nothing» is a saying from Oscar Wilde. The research project «OSCAR – Value for User and Owner of Buildings» is based on this together with intention from Norwegian Government written in White paper Stm 28 2011:2012 named «Good buildings for a better society». The main intention for the project is to develop competences, methods and analysis tools for optimizing building design in a way to contribute to value creation for owner and end-user throughout its lifetime. The project started in June 2014 and is expected to be finished in January 2018. In addition to reports from work packages, a guideline on how to create value and a wordbook to avoid misunderstanding different words definition/content will be the main outcome. The research methodology is based on qualitative and quantitative research methods, as: literature review, case studies, questionnaire interviews, survey and workshops. As a start it was important to set up a map - and model for life cycle value contribution, see figure 1.

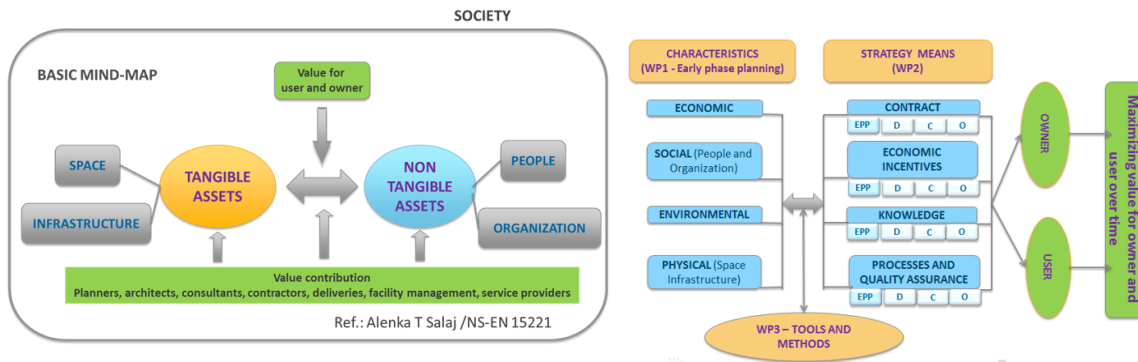
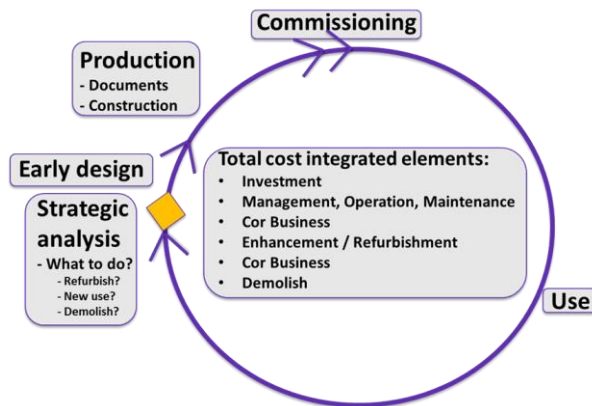


Figure1. Value contribution mind map Figure 2. Value contribution model  
(EPP – Early Plan Phase, D – Detail Design Phase, C – Construction Phase, O –Operation (Use) Phase)

The research findings in the Oscar project are a result of cooperation with 22 project partners from three countries from academic, private and public sector, representing all stakeholder groups.

Value is often defined as function divided by cost. The best value is achieved with an increasing numerator and a decreasing denominator. For OSCAR, function refers to the building's function for the undertaking over time. Cost for OSCAR is a combination of the investment cost, the facility management (management, operation, maintenance, service and support) costs and the core business's costs relating to use of the building. Oscar lifetime phase plan, which is generic, including refurbishment and demolition as a decision gate, is shown as a circular economy, also decision gates, is shown in figure 2.

Figure 2: Oscar phase plan throughout lifetime as circular economy



Oscar project contains three work packages (see figure 1):

- WP1: knowledge of needs to be addressed in the early phase to maximize the values for user and owner of building.
- WP2: identify how can existing project execution models (planning, construction and commissioning) be used to achieve the goal of value creation in all phases?
- WP3: Development of methods processes and tools to safeguard this throughout the lifetime (guideline to stakeholders).
- WP4: Networking and dissemination of results from the OSCAR project (a continuous activity from day one in the project)

Based on a literature review focusing on definitions of value in a building context, it was concluded to use the following definitions in the Oscar research project:

- Value: the project value should be a result of owner's project strategy.
- Value creation: process needed to achieve value.
- Added value: innovation and possibilities throughout the project process which can increase value outcome.

Within the first phase of the research, a list of characteristics and means of what was considered as important for value creation was derived from a literature review. The specific characteristics and means were sorted in four groups. Three groups are well known from definition of sustainability: Economy, Social (People and organization) and Environmental. Based on the definition in White Paper, Stm 28 2011:2012, of a Sustainable building as a building, which fulfils core businesses needs over time to lowest use of resources, the fourth group of characteristics were added, namely Physical (Space and Infrastructure). An unacceptable condition of the latter will affect the other three groups negatively.

Two large scale questionnaire surveys have been performed, with respondents from all stakeholder groups in the widely defined Norwegian property and building sector, including owners and tenants/users. The first survey (approx. 900 respondents) focused on the respondents opinion of importance regarding value creation for owner and user, and how it is implemented and focused in projects. The other survey with more than 1000 respondents focused on different execution models (tender-, construction- and contract model) and how value creation for owners and users were implemented.

### 3. FINDINGS

A wide range of findings regarding the respondents experience and their characteristics of value creation is listed work package 1 and 2 (WP1 and WP2):

- Ownership and Project Management. Lessons learned of existing practice is that project owners in many cases do not define clear goals (value) that can be operationalized into (measurable) indicators that show whether owners and users reach and meet their goals.
- Implementation Model. A distinct implementation strategy must be in place and should consist of a tender-, construction- and contract model. The implementation strategy affects responsibility, risk allocation, organization, information flow, and form the framework for interaction between project participants.
- Delivery Model. The final delivery is the product that should meet the given goals / value creation objectives for the project, and should be measured against these. The ability to measure the outcome depends on the time of in use from handover. The model will ensure a process that safeguard that the client receives the quality and characteristics given as a requirement.
- Incentives. The use of incentives must be considered as a mean to improve effectiveness and productivity. Wrong incentives may be regarded as perverted as they can have a negative effect on the intended outcome. Furthermore, they must be based on measurable criteria that motivate all actors towards common goals and to prevent suboptimization. The use of monetary incentives for early phase suppliers may be counterproductive.
- Structured and proofed decision-making in the early phases is crucial for the project outcome. It is recognized that decision making in early phase of a project are most effective for long-term value creation for the owner and user. In this phase it is thus crucial to have the widest possible range of expertise in various subjects combined with a good project management with complementary process management.
- General knowledge of user and owner experiences. Experience and measurement of value for the user and owner of completed projects, are performed to a small extent (i.e. Post occupancy evaluation (POE)).
- Experience from Facility Management (FM) in the early phases. There is a great potential for improvement regarding involvement of FM in early phase in order to achieve value for both users and owners in the use phase. Experience from Public Private Partnering (PPP) projects is particularly relevant here, both with and without private funding.

- Special responsibilities of authorities and policy organizations in the industry. It can be concluded that the authorities and industry have great potential for influence by giving quality requirements and developing industry standards for the parameters that should be emphasized in the future.

From the first questionnaire regarding respondents experience from projects, the following general trends were found in projects executed the last three years in Norway:

- Investment costs are of high priority, at the expense of life cycle costs
- Investment costs are of high priority, at the expense of tenants costs in the use phase
- From environmental aspects, the most focused issues are those where there exists strict regulations in Norway, such as indoor climate and energy efficiency, whereas more voluntary measures, such as the use of environmental certification systems are more seldom, and recycling of building materials had no focus.
- From physical aspects the most focused area were assessed as accessibility and universal design, whereas planning for long term generality scored lowest.
- From social aspects, the highest focus is set on user participation in the planning process.

The questionnaire surveys conducted in WP1 shows that the respondents from the real estate and construction sector see a need for change, with greater focus being placed on value for users and owners in a life-cycle perspective. At the same time the respondents state that they know little about life-cycle planning and value-based project management.

The most important value aspects for both users and owners are found to be related to the building's adaptability where the premises facilitate efficient work processes and good logistics and fulfil various well-being criteria over time.

#### **4. RECOMENDATIONS AND CONCLUSIONS**

Based on findings in the OSCAR research project, recommendations for adequate actions to be taken by owners and stakeholders in the building sector, political authorities, research and academia and to upcoming WP3 in the OSCAR-project. In summary, these are as follows:

- Stakeholders in the building sector. The industry must support to establish a permanent national competence center with the mandate to implement innovation and new knowledge into the building industry sector. In this case, the industry is expected to contribute to the realization of such a center. The largest stakeholders in the building sector must take the responsibility to actively contribute to the innovation and development of best practices.
- Political authorities. The government is encouraged to contribute to the establishment of a permanent national building sector competence center for the initiation of development projects, dissemination of knowledge as well as best practice. Furthermore, it is encouraged to evaluate the introduction of a minimum 5-year warranty period, so that the efficiency of the building can be measured after 5 years. This will help ensure quality over time
- Research and academia. As these educate tomorrow's expertise and resources, they have a major responsibility for the elevation of the building industry to meet future standards. It is also recommend to place emphasis in applied research and closer cooperation with building industry. All aspects of life cycle considerations, and how to handle it, should be emphasized by research institutions and academia.

WP3 in OSCAR-project. WP3 will develop an online guideline, where the ambition is to supply the different roles in projects with relevant knowledge, methods, tools and examples on HOW to implement and secure value creation in projects. Based on results so far it will be focused on three main areas; 1): Value

management, Project - and process management, 2): Life cycle aspects and 3): competence. It is concluded to use OSCAR definitions as:

- Value: the defined and planned outcome for owner and user resulting from the project. The project value should be implemented in the project strategy and goals.
- Value creation: The sum of the activities that will lead to the defined values of the owner and user
- Added value: The value for owner and user that can be added in addition to the originally defined value. This can be a result of innovation and/or improvements throughout the project process which can increase value outcome.

OSCAR finds that the design team in early phase should be strengthened with competences from facility management and core business area (user involvement), in addition to integrated architecture and technology. The goal is to ensure value for users, owners and society as a whole seen from a life-cycle perspective.

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# **Activity based working (ABW) – Panacea or fad? First hand experiences from three AMW pilots at a Norwegian institution for research and higher education**

Knut Boge

Anne Marthe Isaksen

Naina Palak Nayyar

Oslo and Akershus University College of Applied Sciences, Oslo Business School, Norway

E-mail: knut.boge@hioa.no

## **Abstract**

Most employees at Norwegian institutions for research and higher education have their own cell offices. In 2013, a Norwegian institution for research and higher education undertook an ABW pilot study. Approximately 80 of the institution's administrators had to move from their individual cell offices to a large refurbished ABW flex office area with free seating and clean desks. This transition from cell offices to ABW and flex offices reduced these administrators' space consumption with approximately 20 per cent. Almost simultaneously, one of the institution's top-level management teams also moved from cell offices to a refurbished combi office with reserved workstations and shared facilities. During the spring 2017, another of the institution's top-level management teams moved from cell offices to a refurbished combi office with shared facilities. The research question is thus, what are these employees' experiences with ABW? The present research is a case study, consisting of a comprehensive literature review and three cases. The first case is the large ABW area with flex offices and clean desks inhabited by administrators. The second and third cases are the smaller combi offices inhabited by two of the institution's top-level management teams. Data was collected during the spring 2017 through observations and semi-structured interviews with 15 administrators and first hand users of the large ABW flex office area, and two top-level managers and first hand users from each of the two smaller combi offices. This study is also based on interviews with two representatives for the institution's Real Estate Department and the architect and project manager responsible for refurbishment of the large ABW flex office area. This study has provided several findings. This study has shown that a post-occupancy evaluation some years after a transition from individual cell offices to ABW is very important both to safeguard organisational learning and to realise the payback from investments in ABW. This is a small N case study at one institution for research and higher education. Most informants are managers and administrators. Further research is needed. Among others to corroborate some of this study's findings, and to investigate teachers and researchers' experiences after transitions from cell offices to ABW. The take home messages from the present research are: Firstly, most of the informants who have combi offices seems to be somewhat more satisfied with ABW than informants who have flex offices. Secondly, communication and knowledge sharing seems to be more important for the informants' perceived productivity in ABW than concentration and privacy. Finally, organisations that aim for organisational learning and payback from investments in ABW should clearly invest in post occupancy evaluations after transitions from cell offices to ABW.

**Keywords:** Activity based working, Combi offices, Flex offices, New ways of working, Post occupancy evaluations

## 1. Introduction

During the 20<sup>th</sup> century, implementation of Frederick Winslow Taylor's ideas about Scientific Management significantly improved manual workers' productivity. The Scientific Management's founding principles, according to Drucker (1999) was to analyse the workers' tasks, carry out time and motion studies, simplify the work processes and eliminate unnecessary movements, and design and use proper tools for the job. Assembly lines in factories, where each worker carry out a precisely defined task in the production chain, is a textbook implementation of Scientific Management.

Knowledge work differ fundamentally from manual work. Knowledge work requires formal education, and the knowledge workers' asset is their "ability to acquire and to apply theoretical and analytical knowledge" in their production processes (Drucker, 1995, p. 231). Manual work is primarily physical; knowledge work is usually less tangible and "difficult to map and assess" (Greene and Myerson, 2011). One of our times' big issues, according to Drucker (1999) is how to improve the knowledge workers' productivity.

ISO/FDIS 41011 (2016) defines a *workplace* as a "physical location where work is performed", and a *workstation* as a "location containing furniture and supporting equipment (including telephony, IT and power connections), specifically designed or suitable for work-related activities" that is "suitable for permanent use". The 1960s and 1970s' office landscapes were attempts of implementing Taylorism and factory logic in offices (van Meel, 2011). In the 1980s and early 1990s, many organizations replaced their office landscapes with cell offices or cubicles. This shift was partly a consequence of knowledge workers who did concentration work often suffered in landscapes. However, it is difficult to measure knowledge workers' productivity. Hence, it is also difficult to measure the effect of different kinds of workplaces and interventions on workplaces (Ramirez and Nemhard, 2004; van der Voordt et al., 2016; de Been et al., 2016).

Development of information and communication technology (ICT) has changed many organizations as well as individual workers' ways of working. Tasks that earlier had to be accomplished at a workstation at a particular workplace is now often possible to carry out anytime and anywhere. Hence, ICT have made many work tasks time and space independent. This is particularly relevant for many of the knowledge workers' tasks. The fast growing numbers of knowledge workers, ICT, increased competition because of globalization, rising prices on real estate, and rising tenant costs have also led to increased emphasis on buildings' cost-effectiveness and area efficiency, as well as the knowledge workers' productivity. The most important workplaces for knowledge workers, according to Vartiainen (2007), are their main workplace; i.e. the office with its workstations, at home, at so-called third places, such as cafés, hotels, office hotels, etc., at moving places; i.e. means of transport such as trains, airplanes, ships and cars, and finally other workplaces, such as at partners or customers' premises. During the 1990s, many organizations began to experiment with so-called "new ways of working" (NWOW) (Gorgievski et al., 2010; Brunia et al., 2016). The aim of these experiments were often to improve the organization's competitiveness through reduced costs due to better space utilization and more productive knowledge workers. Arge and Landstad (2002) claims that business driven implementations of NWOW and open offices are far more viable than cost driven implementations.

Most employees at institutions for research and higher education are knowledge workers. Today, most knowledge workers at Norwegian institutions for research and higher education have individual cell offices. During the last decades, the number of students at Norwegian institutions for research and higher education increased significantly. There is expected more students in the years to come, and more students means increased need for space. However, space in built areas in central urban areas is costly. The Norwegian government, similarly as the governments in most other developed countries, emphasize and prioritize research and higher education, but there is a lag in the funding of institutions for research and higher education. There are few automated links between increased number of students and increased funding to institutions for research and higher education, especially for building or leasing new buildings. Hence, to accommodate the growing number of students, Norwegian institutions for research and higher education have to innovate and improve the utilization of their existing areas, for instance through replacement of individual cell offices with areas for activity based working (ABW).

In 2013, a Norwegian institution for research and higher education undertook an ABW pilot study. Approximately 80 of the institution's administrators had to abandon their individual cell offices and move to a large rebuilt flexible office area with free seating and clean desks. Almost simultaneously, one of the institution's top-level management teams also moved from cell offices to a rebuilt combi office with reserved workstations and shared facilities. During the spring 2017, another of the institution's top-level management teams moved from cell offices to a rebuilt combi office with shared facilities. The research question is thus, what are these knowledge workers' experiences with ABW? How do the knowledge workers' work patterns match their new offices and workstations, and how do these new offices and workstations influence these knowledge workers' communication, interaction, concentration and privacy?

## 2. Workplaces and workstations

Jensen (2001, p. 129) distinguish between four main categories of offices at workplaces. The first is open landscapes; i.e. large rooms with numerous workstations. The second is cubicles or cell offices, usually for individual workers or small numbers of workers. The third is group offices where the workers are seated according to their organizational belonging. The last is so-called activity based offices with different zones and types of workstations that facilitate various work tasks, ranging from individual concentration work to group work dependent of communication and interaction. De Been and Beijer (2014) similarly distinguish between three categories of offices. Their first is individual or shared (cell) offices with assigned workstations. Their second category is combi offices; i.e. assigned workstations with additional workstations for activities that require concentration or communication and interaction. Their third and last category is so-called flexible offices with no assigned workstations, where the workers choose workstations depending on their activities. Flexible offices, which is the most radical space-sharing concept at workplaces is usually based on a clean desk policy and workstations freely available across organizational boundaries (Booty 2009, p. 359). Group offices can be one of the options in an ABW scheme, but introduction of group offices in not necessarily introduction of ABW.

Jensen (2001) and de Been and Beijer's (2014) descriptions of office environments is summarized in Figure 1.

**Figure 1: Office environments**

	<b>Office landscapes</b>	<b>Cubicles or cell offices</b>	<b>Group offices</b>	<b>Activity based working (ABW)</b>
<b>Assigned workstations</b>				Combi offices
<b>Not assigned workstations</b>				Flexible offices

Source: Based on Jensen (2001) and de Been and Beijer (2014)

Office landscapes, cubicles or cell offices, and group offices where the knowledge workers have assigned workstations are traditional office environments. However, many organizations keep some workstations in office landscapes, cubicles, cell offices or group offices vacant to accommodate guests, visitors or temporary employees. ABW is one example of NWOW, where the office environment is denoted combi offices if the knowledge workers have assigned workstations and flexible offices if the knowledge workers do not have assigned workstations.

Organizations that replace traditional office environments with ABW often compensate the knowledge workers by providing different kinds of facilities in addition to the workstations (Booty, 2009, 352-353). Examples of such facilities are social zones or breakout areas with kitchenettes, coffee machines, coffee tables, sofas, etc. and various kinds of touchdown areas for those who do not need a workstation but only a place to read e-mails. In most organizations, about two thirds of the meetings involve six persons or fewer, and approximately fifty per cent of the meetings involve four persons or fewer (Booty, 2009, p. 353). Many organizations have more advantage of several smaller meeting rooms than few large meeting rooms. In

organizations that have implemented ABW schemes, small meeting rooms are used for phone calls, concentration work, etc. Replacement of traditional offices with ABW schemes is often also compensated with other facilities such as an improved canteen or company restaurant, facilities for physical exercises, etc. (Booty, 2009, p. 330 ff.).

### **Different types of knowledge workers**

Greene and Myerson (2011) developed four ideal types of knowledge workers, based on their mobility and use of workstations. Leesman (2016a) in cooperation with IFMA Sweden has also developed almost similar ideal types, and even these ideal types are based on the knowledge workers' mobility.

The first ideal type is Greene and Myerson's (2011) "anchor" and Leesman's (2016a) "camper/squatter". The anchor or camper/squatter are desk workers with work tasks that require focus and concentration, who spend most of their day near their workstations. Approximately 32 per cent of Leesman's respondents fit into this category in 2016 and 30 percent in 2017 (Leesman, 2016a; 2017).

The second ideal type is Greene and Myerson's (2011) "connector" and Leesman's (2016a) "timid traveller". The connectors or timid travellers do most of their tasks from a particular workstation, but are also highly dependent of interaction with other knowledge workers, often in different departments. About 41 per cent of Leesman's respondents fit into this category (Leesman, 2016a; 2017).

The third ideal type is Greene and Myerson's (2011) "gatherer" or Leesman's (2016a) "intrepid explorer", who spend more than half of their time outside the workplace collecting information and interacting with customers, stakeholders, etc. About 18 per cent of Leesman's respondents fit into this category in 2016 and 19 per cent in 2017 (Leesman, 2016a; 2017).

The last ideal type is Greene and Myerson's "navigator" and Leesman's (2016a) "true transient". The navigators or true transients spend most of their time on the road and use several workstations when present at their employer's premises. Navigators or true transients are almost guests at their own workplace. About 9 per cent of Leesman's respondents fit into this category in 2016 and 10 per cent in 2017 (Leesman, 2016a; 2017).

Leesman's studies may indicate a slow shift towards increased mobility among knowledge workers. However, Leesman (2017, p. 11) seems to have a somewhat normative approach to camper/squatters and timid travellers, because the camper/squatters are considered "truly anchored to their workstations and not finding other spaces elsewhere", and the timid travellers "remain strongly attached to their single workstation". It seems that Leesman is more passionate about mobility and ABW per se than trying to optimize the match between the knowledge workers' actual tasks and their office environments.

Greene and Myerson (2011) seems to have a somewhat more pragmatic view on ABW and mobility than Leesman, and recommend differentiated office environments to anchors, connectors, gatherers and navigators. The anchors spend most of their day at their workstation, usually focused and concentrated, and Greene and Myerson (2011) noticed that many anchors "struggle in noisy environment". Thus, most anchors need an office environment that facilitate focused concentration work. Connectors on the other hand need a chair where they can leave their jacket, and an office environment that facilitate collaboration with others. The gatherers spend most of their time outside their employer's premises and can work well with shared desks when they are at their official workplace. That is also the case for the navigators, who also need a place where they can sit down with their laptop computer when they are at their employer's premises (Greene and Myerson, 2011).

### **Communication and interaction**

Knowledge work is "highly cognitive and highly social", according to Heerwagen et al. (2004), and more dependent of collaborative work than traditional manual labour, according to Nenonen et al. (2009).

Workplaces for knowledge workers may thus benefit significantly from inclusion of areas that facilitate interactions between the knowledge workers.

Compared to workstations in cell offices or cubicles, ABW based on workstations in combi or flexible offices facilitate communication and interaction among the knowledge workers, which in turn facilitates knowledge sharing and cooperation (de Been and Beijer, 2014). However, knowledge workers in flexible offices with low degree of choice is significantly less satisfied with communication and interaction than knowledge workers with closed offices or flexible offices with a high degree of choice concerning where to work (Leesman, 2016b). Thus, Leesman's statistics indicate that flexible offices with a low degree of choice is the least preferred option for most knowledge workers.

There are indications that conversations in open office environments such as combi and flexible offices are shorter than in cell offices (de Been and Beijer, 2014). Most likely because of fear for disturbing colleagues (Parkin et al., 2006). There are also indications that knowledge workers who have assigned workstations in combi offices are more satisfied with their work station and work environment than knowledge workers in flexible offices who not have assigned workstations (de Been and Beijer, 2014). Combi offices with assigned positions often makes it far easier to locate colleagues than in flexible offices with free seating (de Been and Beijer, 2014). This is particularly the case in large buildings when the flexible offices are crowded.

Thus, ABW environments provide some benefits concerning improved communication and interaction with colleagues, but there is no such thing as a free lunch. ABW have costs.

### **Concentration and privacy**

Several studies show that open office environments such as landscapes, combi offices and flexible offices compared to individual or shared closed offices such as cell offices; provide challenges concerning the knowledge workers' focus and concentration (Sundstrom et al., 1994; Parkin et al., 2006; Gorgievski et al., 2010; Greene and Myerson, 2011; de Been and Beijer, 2014; Leesman, 2016b). Noise and other disturbances may thus represent a problem for knowledge workers who do individual concentration work in open office environments.

However, knowledge workers working in office landscapes, combi offices or flexible offices have different strategies for overcoming disturbances. Parkin et al. (2006) found that many knowledge workers with workstations in landscapes came early or worked late, or worked at home when they had to concentrate. Gorgievski et al. (2010) similarly found that knowledge workers who moved from individual closed offices to an ABW environment worked significantly more from home after they had moved to the ABW environment. Many knowledge workers with workstations in open areas also consider it problematic not being able to personalize their workstation, such as being able to adjust the temperature (Gorgievski et al., 2010; van der Voordt et al., 2016). Many knowledge workers need visible markers such as movable walls or curtains to create a feeling of privacy (Greene and Myerson, 2011). De Been and Beijer (2014) found that knowledge workers with workstations in combi or flexible offices had significantly lower score on privacy compared to respondents with workstations in closed offices.

Thus, ABW environments provide some benefits concerning improved communication and interaction, but have a cost concerning the knowledge workers' focus and concentration, and concerning the knowledge workers' opportunities to personalize their work environment.

### **3. Methods**

The present research is a case study based on interviews, observations and discussions with the architect who served as project manager for the Norwegian institution for research and higher education's large ABW area, other employees in the Real Estate (RE) Department, and knowledge workers belonging to ABW areas with combi and flexible offices. Case studies are well suited when the aim is to get a better understanding of a phenomenon or process and the context where the processes take place (Yin, 2009). The present research

includes three cases. The first case is a study of a large flexible office for administrators. The two other cases are studies of combi offices used by two management teams.

The informants were recruited through non-probability sampling (Gerring and Christenson, 2017, pp. 57-58), which is the common approach for case studies. The 15 informants belonging to the large flexible office were recruited through an e-mail endorsed by the RE Department to those belonging to the large flexible office. The convenience sample of 15 informants who decided to participate represent approximately 18 per cent of the administrators working in the large flexible office. Those knowledge workers belonging to the large flexible office may have enrolled in the study because of particularly positive or negative views concerning ABW. The 4 managers from the management teams belonging to the two small combi offices were also recruited as informants, and these were recruited through purposive sampling. That was also the case for the 3 informants employed by the RE Department. These 22 informants have provided first hand impressions of introduction of ABW in Norwegian institution for research and higher education. Yin (2011, pp. 88 ff.) recommends purposive sampling in qualitative studies, but that was not feasible when recruiting informants belonging to the large flexible office.

The interviews were semi structured, governed by an interview guide based on the literature review and the research questions, such as recommended by among others Yin (2009, p. 3; 2011, pp. 132 ff.). Each informant signed a declaration about informed consent, which also guaranteed the anonymity of those informants working in the ABW areas. In addition to interviews with the informants, there were also made observations of the ABW areas. These observations gave valuable supplementary information (Yin, 2011, pp. 143 ff.). Field notes were made during each interview. The field notes were transcribed immediately after each interview, and those informants who would like to see the transcription of their interview received it, and corrected, commented and approved the transcription. The informants' review of the transcriptions clearly strengthen the study's validity. The transcriptions were thereafter systematized and analysed.

#### **4. Results**

This section presents the findings from the interviews and observations made in the three ABW areas. The structure is first an introduction of the three cases, then an overview of the knowledge workers inhabiting the three ABW areas, and thereafter the findings concerning communication and interaction, and concentration and privacy.

##### **The three cases**

The first case is a large flexible office built as a pilot project in 2013. The RE Department's aim was to design and test a future oriented workplace concept that facilitated cooperation, creativity and effectiveness. The architect and project manager used words as "cooperation", "freedom of choice" and "flexibility" when describing this flexible office. One of the RE Department's other employees emphasized that moving around in the flexible office would provide health benefits to the knowledge workers. The RE Department estimated that compared to the existing cell offices, introduction of NWOW and the new ABW office would save space. In order to accommodate more students, the institution for research and higher education has to become more area efficient. Substituting some of the administrators' cell offices with a flexible office could also send a positive signal to employees as well as external stakeholders. After completing the project, the RE Department has estimated a saving of approximately 20 per cent of the area compared to the former cell offices. However, so far, the economic effects of this project has not been evaluated.

Approximately 80 of the institution for research and higher education's administrators belong to this new flexible office, and 15 of these became informants for this study. These knowledge workers have different positions and work tasks and moved into this new flexible office in two rounds. The first group of knowledge workers moved in as soon the conversion from cell offices to a large flexible office had been completed. This first group told about a high degree of user involvement. The RE Department hired a consultant to arrange a

kick-off meeting, inspiration meetings and talks for the administrators. The administrators also got a guided tour in the new office before they moved in. The RE Department also carried out a pre-occupancy study to investigate these knowledge workers' work patterns. This pre-occupancy study uncovered that most of the administrators spent less than 50 per cent of their working hours in their offices. The remaining time was spent on meetings, seminars, travelling, at home with ill children, lunch, holidays, etc.

When the first group of administrators had got used to their flexible office, the RE Department discovered it still was plenty of space. The RE Department therefore carried out a new but less extensive conversion in the flexible office. Then, the second and last group of administrators moved in. This second group of administrators reported about significantly less user involvement before moving from their cell offices to the flexible office than the first group of administrators did.

The large flexible office includes four areas that belong to different departments, and these areas are open for knowledge workers from the other departments belonging to the flexible office. This flexible office is based on a clean desk policy. However, this flexible office has not fewer workstations than knowledge workers. Each of the flexible office's four areas includes different zones facilitating different work tasks, from communication and cooperation in groups to individual concentration work. The quiet areas are located innermost in each of the four zones. The large flexible office has also several common meeting rooms, and rooms for conversations and video conferences, and a common combined kitchen and dining room. Each knowledge worker has a lockable cabinet for storing of personal belongings.

The second case is a small combi office shared by one of the management teams. Even these managers have lockable cabinets for storing of personal belongings. Two of these managers, which also are active researchers, became our informants. These informants emphasized the signal effect of moving into a combi office; i.e. they had to share office when several of their subordinates had to share office.

The third case is a small combi office for another management team completed during the spring 2017. Four managers share this office, and two of these became our informants. Each manager has an assigned workstation and a lockable cabinet for storing of personal belongings and the four managers share one large, two small meeting rooms, and a social zone. Even the two informants belonging to this new combi office emphasized the signal effect of moving from cell offices to a combi office. Managers moving voluntarily from cell offices to a combi office could make a transition from cell offices to ABW environments more palatable for other knowledge workers.

Both management teams in the combi offices were involved in the decision making concerning their transition from cell offices to ABW. However, informants from both the second and the third case expressed satisfaction with the fact that they were involved in the decision process.

In contradiction to many private enterprises, the knowledge workers at this Norwegian institution for research and higher education has not been compensated for their transfer from cell offices to ABW solutions with improved facilities such as a new canteen or staff restaurant.

### **The knowledge workers' profiles**

The majority of our informants belonging to the large flexible office described themselves as connectors, which means they spend approximately 50 per cent of their working hours at their workstation, but also have numerous meetings. These administrators often work late, and they are always available on their telephones. Four of the informants at the large flexible office described themselves as something in between anchors and connectors, and one described herself as a gatherer; i.e. a knowledge worker that spends most of the working hours outside the formal workplace. None of the informants at the large flexible office described themselves as navigators.

Many of the informants from the large flexible office emphasized their freedom to choose a workstation according to their tasks. However, other informants told they only used one particular or a few workstations in a particular zone. In other words, many of the workstations were assigned informally to particular knowledge workers. Some informants from the large flexible office also told about the managers' unspoken expectations about use of several workstations. Some of the informants who tried to practice ABW told about difficulties

changing workstation during the day according to the tasks, because the large flexible office had become popular, and was often rather crowded.

The managers in the combi offices are far more on the move than the administrators in the large flexible office are, and most managers in the second and third case have work profiles somewhere between connectors and gatherers. However, two of the managers in the second case are also active researchers. When they are in research mode and typically do lots of reading and writing, their work patterns become very much like anchors. None of the managers in the second and third case with combi offices and assigned workstations mentioned crowded offices and lack of space.

### **Communication and interaction**

Many of the informants belonging to the large flexible office described the office and its atmosphere as “social” and “pleasant”. Many informants told they communicated far more with their colleagues after the move to the flexible office. The threshold for talking to others or asking for help had been reduced. The informants also spoke more with colleagues from other departments compared to when they had cell offices, but the number of private conversations with colleagues is significantly reduced.

The informants reported about more cooperation and interaction across organizational boundaries and increased knowledge sharing after moving to the large flexible office. However, according to some informants, the managers’ changed attitude after moving to the flexible office, hereunder a more positive view towards project work could be just as influential as the new office design. Some informants told the flexible offices’ physical lay-out and distance to colleagues could harm cooperation and knowledge sharing within the organizational units.

One of the advantages with the flexible office compared to the cell offices, according to several informants, was that flexible offices facilitate brief and informal meetings with colleagues. You can ask immediately instead of sending e-mails or summon formal meetings.

Most of the managers in the second and third cases were also positive to combi offices and ABW, but some of the managers concluded that social interaction is not necessarily professional or academic knowledge sharing.

### **Concentration and privacy**

Very few informants belonging to the large flexible office mentioned challenges concerning concentration, even if some of their colleagues disturbed when talking or walking when they tried to concentrate. Those informants most disturbed by their colleagues often chose to work in one of the flexible offices’ private offices. One of the informants told he/she was more tired after a day at the job after moving from the cell office to the flexible office.

Many informants belonging to the flexible office reported about more frequent interruptions than when they had cell offices. However, most informants considered these interruptions as a “give and take” game. The payback was quick resolution of their own issues.

On their own initiative, some informants belonging to the flexible office told about need for more quiet rooms, more room to store their personal belongings and equipment, need for a private keyboard and more wireless devices, and disturbing noise in the quiet rooms from the ventilation system. They also told about problems locating colleagues. Some informants were not satisfied with the working from home options. Other informants belonging to the flexible office were dissatisfied with the fact that some knowledge workers got quiet rooms as private offices. However, one of the representatives for the RE Department told they are legally required by the Working Environment Act to offer individual adaptations when needed, and assigning private offices is one example of such adaptations.

None of the informants from the second and third cases with combi offices explicitly mentioned concentration as a challenge, even if their concentration level is lower in the new ABW environment than in their former cell offices. After moving to combi offices, the managers experienced more interruptions from colleagues, but



their questions are usually quickly resolved. Most of the managers are satisfied with their own productivity. However, one of the managers told that after moving to the combi office, their time became more available for others, which have necessitated stricter time management. One of the managers belonging to the combi offices told that social interaction in some instances was far more disturbing than noise. Another manager who also is an active researcher was rather explicit that combi offices do not facilitate research. When working as a researcher, this informant preferred working at home.

## **5. Discussion**

The research question was what are these knowledge workers' at the Norwegian institution for research and higher education's experiences with ABW? How is the match between these knowledge workers' work patterns and their new offices and workstations, and how do these new offices and workstations influence these knowledge workers' communication, interaction, concentration and privacy?

Most informants belonging to the large flexible office were connectors, but some had a work pattern in between connectors and anchors, cf. Greene and Myerson's (2011) ideal types. Many informants at the large flexible office emphasized their freedom of choice concerning where to work, in which zone, and at which workstation. The managers in the combi offices were far more on the move than the administrators in the large flexible office were, and most managers have work profiles somewhere between connectors and gatherers. In average, most informants seem to be reasonably satisfied with the flexible office, but informants from the two combi offices with assigned workstations and common facilities seem to be somewhat more satisfied.

Some of the informants who tried to practice ABW in the large flexible office told about difficulties changing workstation during the day according to the tasks, because of a crowded office. All other things equal, difficulties changing workstations according to the tasks reduce the positive effects of ABW.

Both the informants from the flexible office and the combi offices mentioned that ABW environments clearly improved the knowledge workers' communication and speeded up many processes. These findings support findings by among others Nenonen et al. (2009), de Been and Beijer (2014), and Leesman (2016a; 2016 b; 2017). The informants in the flexible office also emphasized increased communication, interaction and knowledge sharing across organizational boundaries as positive effects.

Few informants belonging to the flexible office complained about difficulties with concentration, even if those with tasks that necessitate individual concentration work had less favourable working conditions compared to their former cell offices. Nevertheless, there are obviously some issues concerning disturbances, lack of privacy, facilities for private belongings, noise from the ventilation system, etc., and these findings support findings in former studies (Sundstrom et al., 1994; Parkin et al., 2006; Gorgievski et al., 2010; van der Voordt et al., 2016). Some of the informants belonging to the combi offices mentioned increased need for time management, and that social interactions in some instances were more disturbing than noise. Thus, ABW clearly has some downsides, in addition to numerous upsides such as saved space and increased communication, interaction and collaboration among the knowledge workers.

The title of the present research was, ABW – panacea or fad. The present research indicate that implementation of ABW at institutions for research and higher education most likely not is a fad. ABW and particularly flexible offices save space and maybe costs, but costs and possible cost savings have not been on the agenda in the present research. However, findings in the present research also indicate that ABW clearly not is a panacea. There are for instance indications that ABW is poorly compatible with active researchers' work patterns.

## **6. Implications**

The present research indicate that user involvement is important for successful transitions from cell offices to ABW environments. The two management teams' voluntary moves from cell offices to combi offices have

most likely made introduction of ABW less controversial at this particular institution for research and higher education.

All other things equal, given replacing cell offices with ABW, combi offices with assigned workstations seems more suitable for knowledge workers with work patterns resembling anchors, and possibly for knowledge workers with work patterns resembling connectors. Flexible offices on the other hand, particularly flexible offices with few opportunities for choice of workstations seems most suitable for knowledge workers with work patterns resembling gatherers or navigators.

However, the present research indicate that ABW is not particularly suitable for knowledge workers working as researchers. Researchers are usually highly dependent of individual focused concentration work, and the opportunity to leave books, articles, notes, etc. at their workstation. Many researchers use considerable time to work themselves into deep concentration, and are thus vulnerable for disturbances and interruptions. Such ways of working are usually not compatible with offices with large numbers of users, noise, disturbances and clean desk regimes.

Further research should investigate whether saved space and costs from implementation of ABW can offset possible losses in the knowledge workers' productivity, or if improved productivity can finance investments in ABW environments. Further research concerning introduction of ABW in institution for research and higher education should also investigate implementation of ABW among lecturers, because many lecturers have work patterns resembling navigators and gatherers.

## **7. Conclusion**

ABW seems to be suitable for many knowledge workers working as administrators and managers in institutions for research and higher education. However, successful implementation of ABW is dependent of user involvement and thorough studies of the knowledge workers' work patterns before designing and implementing the ABW environments. Combi offices seem to be most suitable for knowledge workers who have a stationary work pattern and who carry out long-term concentration work. Flexible offices on the other hand seems to be most suitable for knowledge workers who are on the move, who interact frequently with others and who are not dependent of long term individual concentration work. Flexible offices need to have sufficient capacity to permit changes of workstations according to the tasks. Organizations making a transition from cell offices to ABW should definitely make post occupancy evaluations some years after the transitions from cell offices to ABW, to make necessary adjustments, to safeguard the payback from the investments.

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# **Importance for improvement of Energy Efficiency Law for sustainable refurbishment of building stock in Kosovo**

Fuat Pallaska

Student at Nova University, European faculty of Law, Slovenia

E-mail: fpallaska@live.com

## **Abstract**

The paper discusses about the increasing quality of living approach in Kosovo, in accordance with Sustainable Refurbishment of building stock. At first, an analysis of the Energy Efficiency legislation in Republic of Kosovo in comparison with the European Energy Efficiency directives on Energy Building Performance (EPB) is given. The discussion part focus on highlighting the topic for what is the role of a sustainable refurbishment regarding living standard and ecology in Kosovo. From the literature review on the topic of sustainable refurbishment, the technical, environmental and the strategic characteristics are selected for a further study. An assessment of different documents from the case study of a building in Gjakova municipal, Kosovo is prepared for detail study research. We found that in compliance with the better legislation the new construction quality grows, the awareness of sustainable refurbishment is higher, living standard is better and environmental situation, reduction of energy consumption, CO<sub>2</sub> gas emission. The source of evidence in this case are data and statistics from Kosovo Agency of Statistics, legislation policy for the Energy Efficiency. Improving the EU policy and standards in compliance with legal legislation and Law for Energy Efficiency, Construction Law, energy saving ,sustainable refurbishment, Energy consumption, better live. Investments in order to optimize the energy efficiency of the building stock in Kosovo. Constitution of Energy Efficiency Agency in national level and municipal, were can be improved the institutional management and Certificated Auditors for Energy efficiency must continual works on the inspection and auditing procedures and standards, for all building residential the awareness of sustainability refurbishment. The strategic documents and Laws especially in Energy Efficiency sector must be improved to increased the number of building which can be the target for next sustainable refurbishment in Kosovo

**Keywords:** Sustainability, Refurbishment, Legislation, Energy Efficiency, Kosovo

## 1. INTRODUCTION

### 1.1 Paper Motivation

The motivation for this paper title is based on the facts; The European Union attaches great importance for buildings refurbishment as part of strategy to achieve the targets for 2020 (Kyoto protocol 2020, 2020) (Cyoto protocol 2020, 2020)<sup>1</sup>, three twenty (20/20/20), after all, 40% of the energy consumption and the third of the CO<sub>2</sub> emissions in Europe are caused by the real estate sector. In order to change this, existing building especially public need to be energetically refurbished in Kosovo, and the role for Improvement of Energy Efficiency Law on this case studies are very important for sustainable refurbishment. This cause the potential helps to increase energy efficiency, an analysis for the various building and some of the case study's on improving the Energy Efficiency Law on the sustainable refurbishment of Building Stock in Kosovo.

1.2 Study proposes -The paper discusses about the increasing quality of living approach in Kosovo, in accordance with Sustainable Refurbishment of building stock. At first, an analysis of the Energy Efficiency legislation in Republic of Kosovo in comparison with the European Energy Efficiency directives on Energy Building Performance (EPB) is given.

In the beginning of this study we can compare the legislation part on Sustainability Energy Efficiency in Republic of Kosovo and European Energy legislation. We are based on the Draft proposal of Energy Strategy 2013-2022<sup>2</sup> (MZHE - Ministry of Economic Development, 2014)<sup>1</sup>, which is the strategic addressees to the energy efficiency (EE) and renewable energy sources (RES). The basic law is the law of Energy Efficiency, Law 04/L-016 on Energy Efficiency. 2011

In this field or house sector the main role for increasing the sustainable refurbishment are this Laws:

- Building Law (official gazette No. 04/L-110, transport to the directive 2010/30-EPB in Kosovo Public Buildings
- Energy Efficiency Law (Official gazette No.04/L-016)
- Construction Law (Official gazette No.04/L-110)
- Central Heating Law (Official gazette No.03/L-016)
- Electrical Law (Official gazette No.03/L-201)
- EU legislation: Directive 2012/27/EU of The European Parliament and of The Council of 25<sup>th</sup> October, 2012 on energy efficiency, amending Directives 2009/125/EC and 2010/30/EU and repealing Directives 2004/8/EC and 2006/32/EC. Energy Community Treaty-Kosovo.

<sup>2</sup>(MZHE - Ministry of Economic Development, 2014)

Directive 2004/EG ,2006/EG and the latest directive 2012/27/EU , and Kosovo's Obligations to the European Union( EU) are based on the reality , South –Eastern Europe, including Kosovo , through establishment of Energy Community<sup>3</sup> (ec.europa.eu ,Energy community /European Parliament and the Council, 12.06.2014)<sup>3</sup> is required to full fill the European Directives, Which put the large challenges in the front of the market.



Figure 1.1. -Energy building performance EPB-identified by color

Nature of purpose is to achieve the goals with this work in the practical applications for building performance (EPB) on the two study cases ,where we used the all formulas' and inspection material from facilitate on the building where we find the all energy expenses from last(2-3 year). We used this two buildings to analyze and to make the practical schemes and methodology for measures applicable for the better performance of mentioned building.

If we used the energy scoring method pursue a holistic approach to the prioritization of properties, building refurbishment in this cases and to determinate necessary investments which can be the uniform objective procedures designed to improve the energy efficiency and the objective of the empire energy – scoring is to minimize the effort and cost of the survey of the property , by focusing on the most impact of building components which has been identified with standard audit or quick visual inspection.

This 3- tier model we can identified like three pillars:

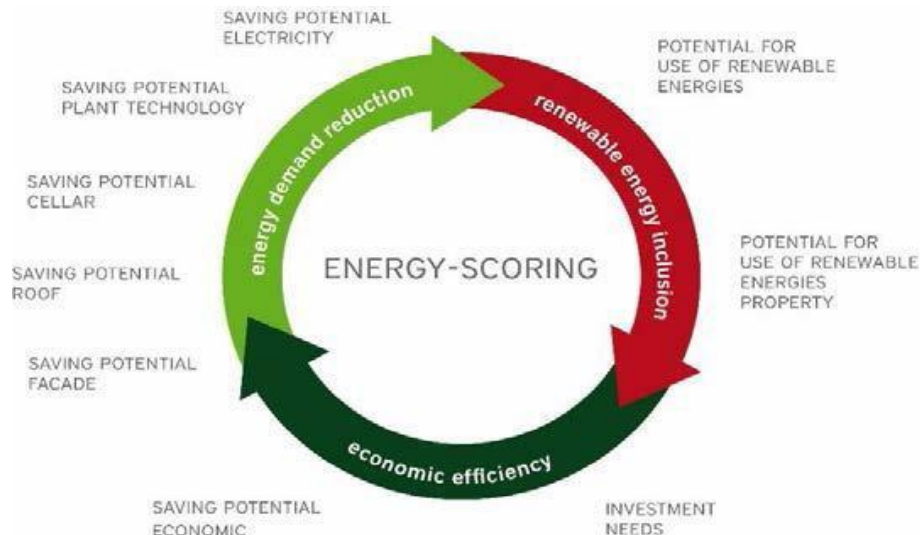


Fig.1.2 Three pillars model of energy scoring

### The 3-tier model – analyzing

The scoring is based on a 3-tier model, which analyzes the various factors influencing the primary energy-saving potential and sets them in relation to each other.

- The three pillars on the first level represent the objectives of the energetic refurbishment leading to the diminution of primary energy consumption:
  - "Energy demand reduction"
  - "Renewable energy inclusion"
  - "Economic efficiency"
- The second level consists of the most significant variables for each of these pillars in the form of criteria (see Fig.1.2).
- Each of these criteria is in turn composed of various indicators on the third level. The criterion "potential for use of renewable energies" is, for example, defined by indicators such as "solar thermal energy", "photovoltaic's" and "wooden pellets - wood chips".

From the (Fig. 1.2.) conclusion is that: The model's three pillars consist of different criteria.

In establishing these criteria and indicators, special attention was paid to their completeness, balance and no redundancy. In addition, the indicators have been thus defined as to ensure validity, sufficient variability, reasonable expenses in the procurement of data and their sufficient influence on the result. The various elements of the model are individually weighted according to their importance for the achievement.

-An assessment of different documents from the case study of a building (residential building and business or 2 buildings) in Gjakova municipal, Kosovo is prepared for detail study research and from this two case studies we make the compare about that it's really very important to invest on this buildings , for giving the good results and we came to the conclusions about reason for Sustainably refurbishment of Building stock in Kosovo.

We gives the final results for this two buildings and make e compare in the table contest with data and calculation we see to what outcomes we came and what is the economical investment analyze done.

If it's the Net Present Value (NPV) in the accordance with (IRR) Internal Ratio Return(%) ? And if the payback period of these investments Sustainable, must be the low then 10 years. All t this data's we describe on the chart wizards and schedule. We used the comparative software in excel for calculation methodology and formulas and equation should be type in Math type.

Al the formulas for this type of calculation we can describe on this form:

$$NPV = I_0 + \sum \frac{F_t}{(1+r+p_t)} \dots\dots\dots (1.1)$$

Where are equation symbols are:

I0- Elementary investment on building

Ft- cash flow or profits from energy measures and energy saving form in that building r- Interest rate in the time or period

pt- inflation norm from the period time T

Formula for Internal Ratio of Return , is in this format :

$$IO = \sum_{n=1}^t \frac{ACF}{(1+IRR)^t} \dots\dots\dots (1.2)$$

IRR – internal ratio of return

IO – Investment on the beginning for measures

ACFt- cash flow after taxis on the investment for each building n- Project time duration

t- time or Payback period of return ratio investment

## 2. BODY CONTENT AND METHODOLOGY USED

It is important that from the assessment done during the analysis we can shortly describe the building situation before and after the Energy Efficiency measures which can be used based on the standards and improvement of the Energy Efficiency rules and compatibility investment in practice. For this study we used the data collection during the visit audit inspection, in Gjakova municipal:



### 2.1.1 Case study 1/ building type – Public institutional building :

- ❖ University of Gjakova “Fehmi.Agani “ – ex. building of technical school “N,Nixha” – year of refurbishment 2014.



Photo 2.1-Ex Public Building School “ Nexhemdin Nixha “Gjakova , 1966 year of Built

- Year of Energy Auditing – 2011, general building description, structure elements of buildings, energy consumption during the last three years.
  - Application of the Energy Efficiency measures (Energy efficiency laws and disposition used common the Energy European Directives). Financial assessment and environmental impact.
  - Strategic documents used for this case study, Energy data ,consumption , energy scoring ,sustainable engineering design of building , costs and payback period with chart wizard and schedule described.
  - Control and evaluation process after the energy measurers implement and Sustainability refurbishment for this building (2015-2016).

This school was built 1966, total building area [4379 m<sup>2</sup>], with ground floor and three floors, district heating substation from Central heating house, with 16 classrooms, laboratory and gym sport hall, 4 offices and other support rooms and annexes.

Structure elements of buildings : Construction of building very old and without insulation, the walls are from bricks with (25cmx20cm) and 3cm plaster both of its side, the windows different type of frames and glasses, frame windows from wood ,metallic and aluminum materials, and outside doors from metallic frame with one glass with lack of insulation. The roof is horizontal with mortar, concrete plate . leveling cement ,hydro insulation! On many places of water leakages inside the classrooms in the third floor. Ground floor without thermal insulation, Heating system in bad situation, with no insulation of pipes and

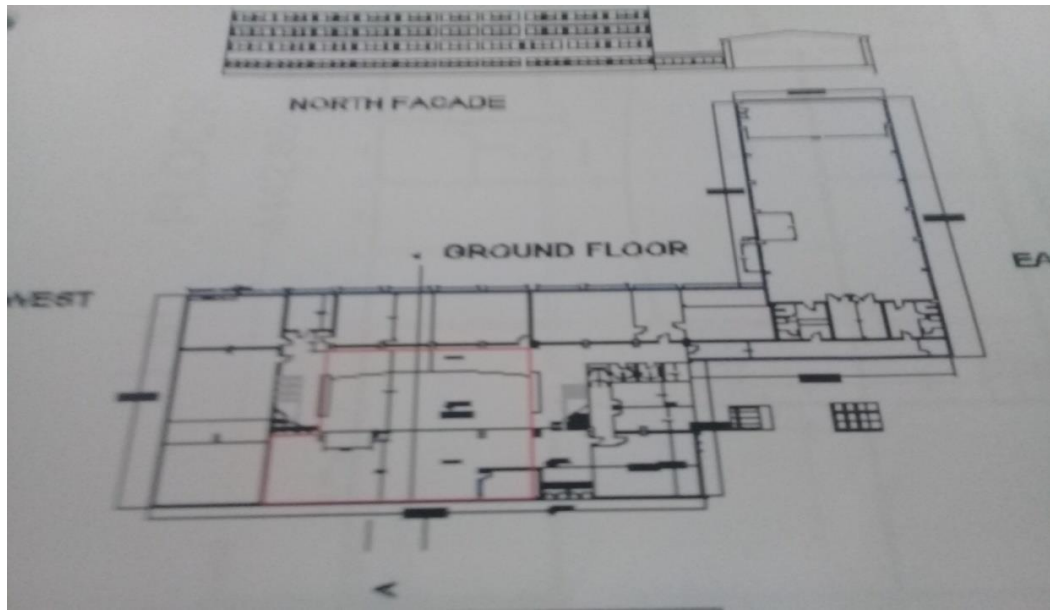


Photo 2.2- Building layout of Ground and I-first Floor perspective

Many heat losses during the winter season, boiler room in the ground floor with non good energy efficiency situation. Two string pipe system with radiators from cast iron ,total number 106.  
The hot tap water is not supplied from the central hating house, usually the use electricity power boilers.

Energy consumption are both , from Heating and Electrical consumers in (kwh/ €) and we can see with data in the table below [2.3]

We collected the bills from last three years ( example for this case is year 2008,2009,2010),the all payment of bills are done for total school surface of building (4379m<sup>2</sup>) as shown below table [2.3]

Heat and electrical consumption in euro[ / monthly / year / overage].

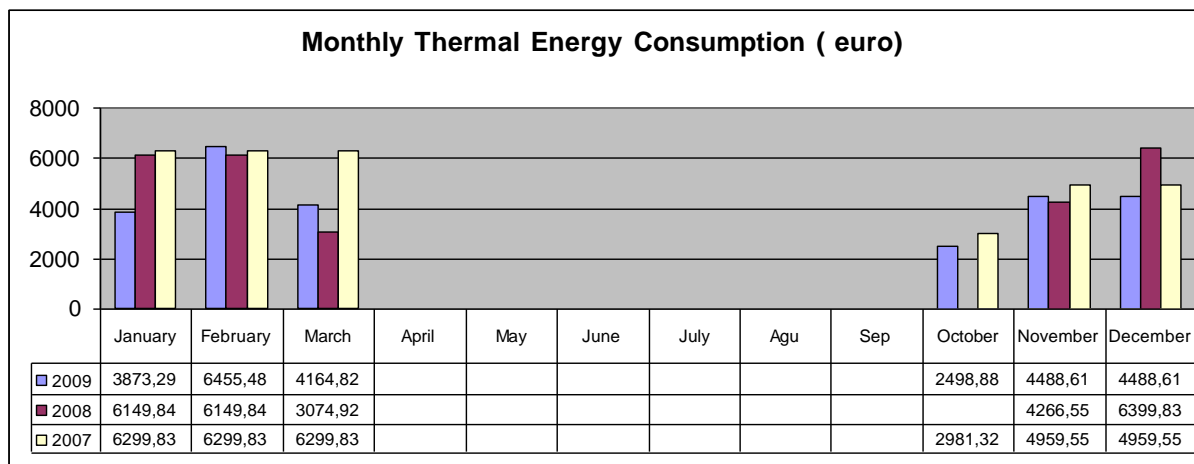


Table2.3- Overage of total energy consumptions at Public Building “University of Gjakova”

No.	Month	Years : 2008		2009		2010		Average [Euro ]
		Heating Euro	Electrical Euro	H	E	H	E	
1	January	6300	1048	6150	1244	3873	1876	7348
2	February	6300	1656	6150	1060	6445	1300	8458
2	March	6300	1160	3075	880	4165	1108	7355
4	April	3150	1120	3075	400	3055	400	3995
5	May	0	576	0	160	0	428	498
6	June	0	544	0	0	0	80	255
7	July	0	0	0	45	0	0	45
8	August	0	0	0	16	0	40	56
9	September	0	560	0	136	0	228	445
10	October	2981	760	2980	608	2499	756	2889
11	November	4960	560	4267	1479	4489	1380	5045
12	December	4960	1865	6400	1250	4489	1250	5899
<b>Total</b>		<b>42080</b>		<b>34067</b>		<b>35583</b>		<b>37243,33</b>

After the calculated of annually energy savings , for all building materials which are used , for exter walls , roof insulation ,windows and air infiltration , doors and all proposed intervention with changing the all lighting system LEED system and intervention in the district heating substation using the all data from:HDD =2095 Average of heating degree days ( Data from Central Heating Municipal House) , with CHP city supply thermal system. Actual situation in District Heating Substation- Poor maintained .And after calculation given the results from Excel are filled in the **table 2.4-Total energy savings**

		proposed intervention	area (m2)	U[W/ m2K]old	U[W/m2K] NEW	heat load[w]	heat load after intervention on(W)	heat load (w)before intervention	Annually energy savings(kwh)	
External wall	mortar (3cm)	cement mortal		1.68	0,347	137848				
	Brick(25x20 cm)	Polysteren	1945,1				26094.3	26091.3	111756	158285
	mortar (3cm)								154311	
Roof	insulation menbran	ceramic tile								
	leveling cement 5cm	leveling concrete								
	Hydroinsulation 1cm	PVC	1844,4	1,790	0.495	180591	26279	154311,9	218557.8	154623
	Concrete 20cm	Polystyrene								
	mortal 1.5cm	Polystrene								
windows ,air infiltration	Wood frame			2,60	1,25	155986,4	56426,7	99559,8	141010,30	115642,30
	Metal windows	Plastic windows frame	1200,2	5,20	1,4	156532	78266,00	78266,10	110851,2	100263,20
	Brick window	Plastic windows frame	25,12	2,60	1,25					
Doors outside	Lighting					4975,6	1052,5	5695,3	3923,0	2954,30
Heating substation						25894,2	9102,20	15695,4	16792	11079,5
total of energy savings						635933,40	188116,00		447871,78	634260,95

**-Lighting system:** was very old , many bulbs out of operation. Calculation for Energy Efficiency is based on assuming the old bulbs (180) and changing them with Leed bulbs where we can saved Energy annually 14066[ kwh] ore more than 100%.

**-Environmental impacts :-** The amount of energy impact in reduction of green house gas ( Carbon Diocide , Sulfur dioxide and NitrogenOxide) is very height based on changing the heating system from Boiler House , with CHP from Central Heating System.

**- The calculation of the existing radiator heat capacity :**

In the table bellow1.5 ,is described the calculation for heating system recovery(HRS ) of the building and heat capacity before and after the measures Q (nominal and actually)and the types of radiators with total capacity of heating transmissions.

No.	Radiator type	Dimensions (High x width) [mm]	Number of elements	Heating capacity for the elements of radiator Wat (90/70/20 <sup>0</sup> C)	Heating capacity (90/70/20 <sup>0</sup> C) (Wat )	Heating capacity for the elements of radiator(50/30/20 <sup>0</sup> C) Wat Actually	Heating capacity actual (50/30/20 <sup>0</sup> C) Wat
1	Cast iron 4collumns	980x160	1894	204	386376	48,98	92616,6
2	Cast iron 4collumns	680x160	15	147	2205	35,2	528
3	Cast iron 4 collums	580x160	18	126	2268	30,2	543,6
4	Steel pipe	1000x600x22	32 radiator	110	3520	100	3200

$$Q[\text{nominal}] = Q(\text{actual}) \quad \mathbf{96888,}$$

**Table 2.5 – Calculation of HRS for building**

**- Financial Assessment for Building Interventions** ;Criteria for selection of energy savings measures were formulated and dedicated to use 1.Simple Pay Back Period (SPP) ,2.Internal Rate of Return(IRR) and 3.Net Present Value (NPV).

After the calculation methodology for this three key elements we give the results for evaluation like a table below 1.6.:

Evaluation and conclusion fore this case study one building school ex build /“ N.Nixha” :

### General Conclusions :

We conclude that the investment from the European Commission and the fund be World Bank was very satisfaction and all ,the measures are implemented due to the criteria and the calculation form from this case study when I was a part of audit team at that period of time 2012-2014.

And the all cost for this Investment to Refurbishment Building school in total cost from :**295,290.00 €** is satisfying this investment because based on the standards and Laws for Energy Efficiency and after the calculation (Table 1.5 ) this amount can be Back , Simple Payback Period **PBP =4.9 year – total.**

All the data and conclusions we can compare with the table below 1.6

measures to be taken	Surface(m2)	Heating load (kwh)	Specific heating load (kwh/m2)	Energy savings (kwh)	Energy savings (euro/year)	% of energy savings	Unit cost(Euro/m2)	Total Cost investment(Euro)	NPV (euro)	Payback period PBP(years)	IRR(%)
Existing conditions	4379	94822	217,4								
External wall insulation	1945	786537	180.9	158285	11080	16,80	30	58,350.00	50,434.00	5.3	18.30%
Roof insulation	1884	567979	130,7	218557	15299	23,10	45	84,780.00	62,145.00	5.5	17%
%	1156	310561	71.4	257417	18019	27.2	27.4	150,280.00	28,290.00	8.3	10%
Lighting				14066	859.41	3.6	1.8	1,430.00	5,044.18	2.2	46%
District heating substation				2407	568.15	2.41		440.00	1,204.79	2.7	37%
								294,840.00	[24/5]=4.8 24 year		
total investments cost								295,290.00	Total PBP.4.9 years		

### Table 2.6-Total Cost Investment Simple Payback Period and IRR





Photo 2.3 – New Building reconstructing school University of Gjakova “F. Agani” actually view 2017



Photo 2.4- Opposite of building after Sustainably Refurbishment with EE measures

### 3. Case study (2) building type – Public institutional building Kinder Garden, in Gjakova municipal

#### ❖ Kindergarten “GANIMETE TËRBESHI” – Gjakova



Fig. 3.1- Building view

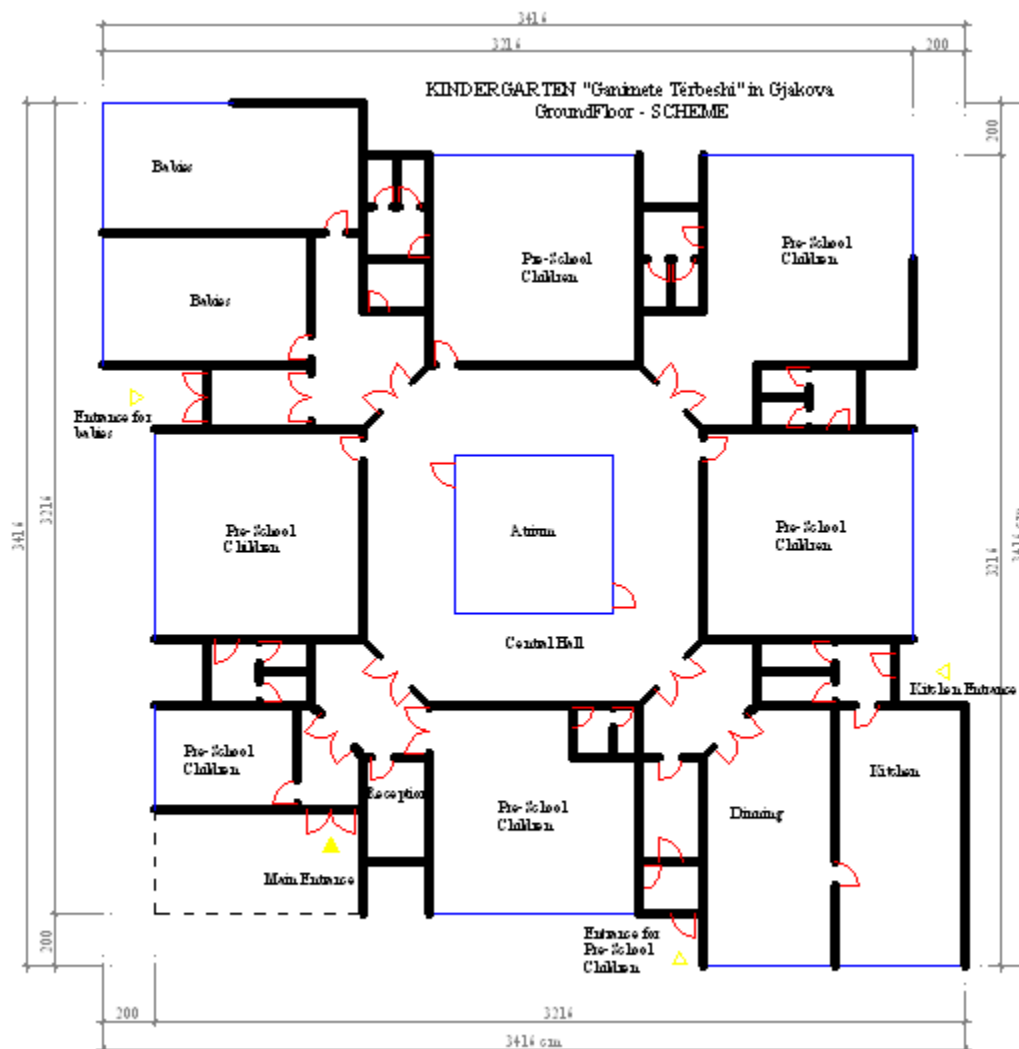
This building we use the case study 2, for the methodology used the problem and calculation for Energy Standards and laws which are important to increase the performance of building EPB and at the end we make the conclusions and analysis.

#### **General building description –**

The Kindergarten “GANIMETE TËRBESHI” was built in 1981 and its key entrances are oriented in north in the “ANTON ÇETTA” Street. The building is used as all-day nursery school for pre-school children and opening times are from 6:30 until 18:30, spread over two shifts. There are currently enrolled in day care around 220 toddlers in total, with 120 pre-school age (1 to 6 years old) and 100 babies (0 to 12 months). To ensure the care of toddlers there are 2 maintenance staff and 7 teachers employed.

The total building area is spread over 777 [m<sup>2</sup>] it covers around 2600[m<sup>3</sup>] in one ground floor level. The floor layout is designed in 8 partly independent constructed units connected by a larger hall located in the middle of the built structure. Building contains the following rooms: baby care rooms, pre-School children rooms, kitchen and dining areas (premises), large hall in the centre, reception area, waiting room, administration, which is located outside of the main building, toilets, and warehouse areas inside and outside of the main buildings and other communication areas.

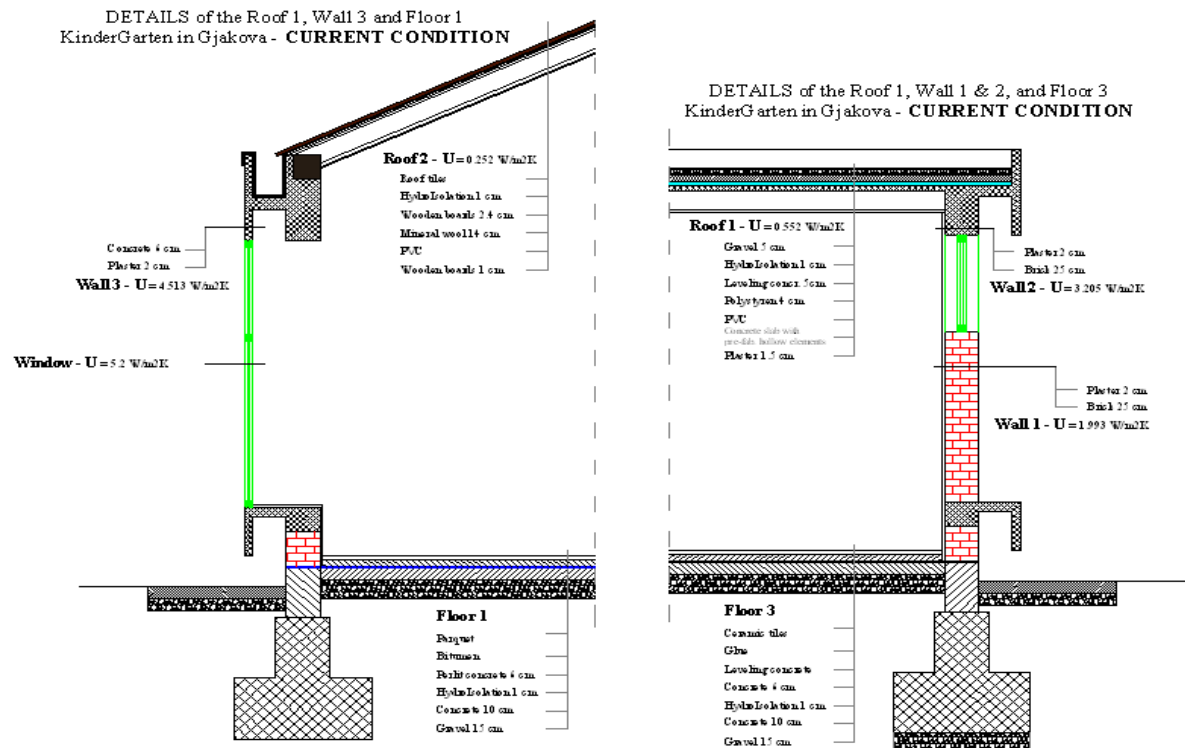
The all existing building conditions we can deliver in the concrete structure of elements:



**Fig 3.2 Layout of groundfloor**

- Structure elements situation during the fascilty inspection ;
- Lack of continues maintenance
- Originally structure for building area and living
- Still leakages in central area of building
- Walls un-insulated ; brick & concrete
- Metal frame windows , mainly double layers glass ,badly fitted and beyond repair
- Floor :parquet, linoleum, ceramic tiles
- Non insulation Pipe on heating substation

- Living Environment is without leveling air circulation and standards conditions
- Floor , wall & roof situation , non insulation non responsive condition

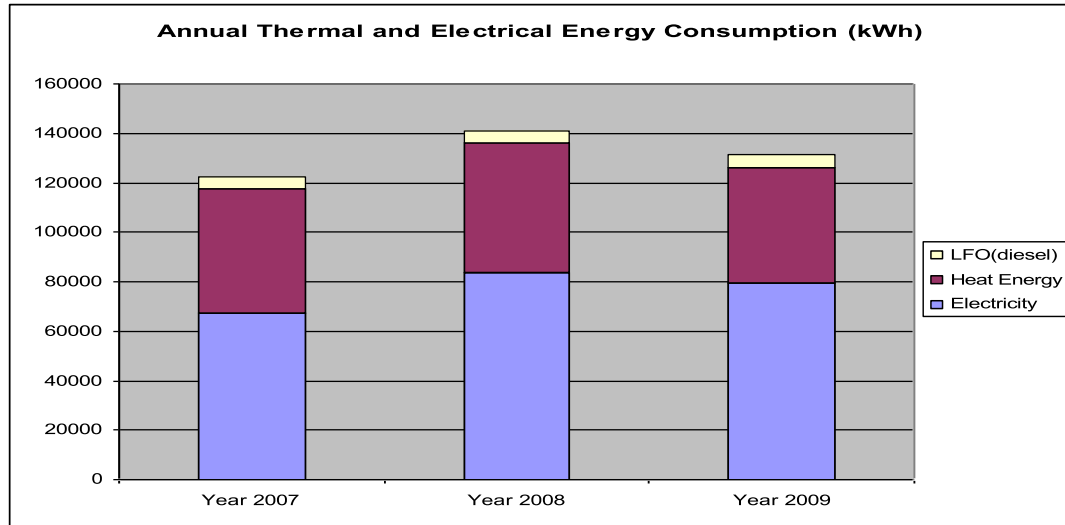


**Fig 3.3- Structure elements current conditions**

Heating situation and lighting – very poor maintained, un insulated pip , hot water supply , boiler room with new heat exchanger not in function. Hot water supplied with three individual water electrical boilers, no temperature control panels, automatic temperature regulation.

**-Energy consumption** ; Wizard present in [kwh]

Space Heating	Year2007	Year2008	Year2009
777 m <sup>2</sup>	[kWh/m2year]	[kWh/m2year]	[kWh/m2year]
Thermal Energy	71,3	73,7	66,3
Electricity	86,5	107,9	102,5
Total	157,8	181,6	168,9



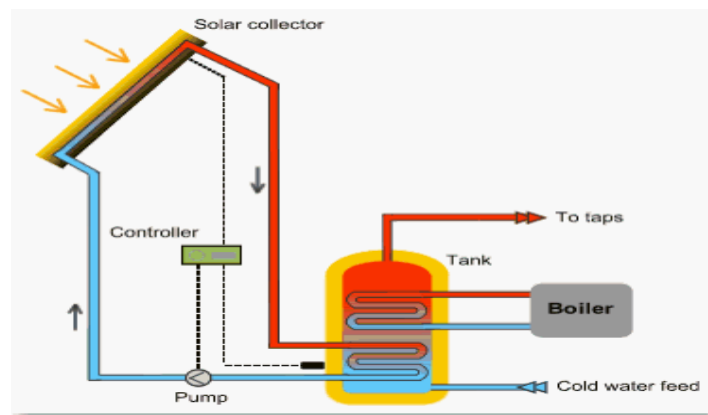
**Table 3.4-Annually energy consumption for 3 year**

-Assessment for solar thermal water application:

In our case the energy consumption for heating the domestic hot water is calculated based on the total number of children and staff that stay in the building (the total number of children and staff is 220), its age and taken into consideration other the following assumption:

- The hot water temperature is taken 40 °C
- The hot water quantity for shower for each person is taken 18 liters (for small persons) and only 70 persons are considered of having one shower per day
- Hot water quantity for personal hygiene is taken 4 liters per person per day,
- Hot water quantity for dishwashing is assumed 5 liters per person per day.
- Here is assumed that for hot water hygiene and dish washing only 90 persons (children and staff) will consume hot water.

On July and August the number of children that stay in Kindergarten building is approximately 50 children  
 Specific heat water  $C = 1,16 \text{ ( kWh/m}^3 \text{ K)}$



**Fig 3.5 -Solar panel and domestic hot water boiler**

No	Months	Working days per month	Children and staff	Dish Washing (liter /day)	Hygiene (liter/day)	Showers (liters/day)	Total water (liter/day)	Total water (m3)	Cold Water temp. °C	Hot Water Temp °C	Δt (°C)	Heat Capacity (kWh/month)	Average monthly solar radiation, kWh/m2
1	Jan	21	90	450	360	1260	2070	43,5	3	40	37	1865,7	42,7
2	Feb	20	90	450	360	1260	2070	41,4	3,5	40	36,5	1752,9	58,6
3	March	23	90	450	360	1260	2070	47,6	4	40	36	1988,2	91,7
4	April	21	90	450	360	1260	2070	43,5	5	40	35	1764,9	113,3
5	May	22	90	450	360	1260	2070	45,5	7,7	40	32,3	1706,3	148,1
6	June	22	90	450	360	1260	2070	45,5	9	40	31	1637,6	159,7
7	July	21	50	250	200	1260	1710	35,9	11	40	29	1208,0	176,3
8	Aug	23	50	250	200	1260	1710	39,3	13	40	27	1231,8	153,7
9	Sept	22	90	450	360	1260	2070	45,5	11,6	40	28,4	1500,3	118,8
10	Oct	21	90	450	360	1260	2070	43,5	10	40	30	1512,8	81,8
11	Nov	22	90	450	360	1260	2070	45,5	7,5	40	32,5	1716,9	50,5
12	Dec	23	90	450	360	1260	2070	47,6	6	40	34	1877,7	42,3
Total (kWh/year)												19763	1237
Losses from pipes and others is taken 5%												33852,40	

**Table 3.5: Calculation of domestic hot water quantity and solar panel**

**Environmental impacts:** The amount of energy saving will have impact in reduction of Green House gas emission. Usually the amount of gas emission is dependent from the type of fuel and quality. In our case the District Heating Gjakova is using Heavy Fuel Oil as fuel to produce the hot water for heating system.

We should calculate the amount of reduction due to energy savings for two types of emissions pollutants:

- Pollutants contributing to Green House effect ( CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O)
- Pollutants contributing to Acid Rain (CO, SO<sub>2</sub>, NO<sub>x</sub>, NMVOC)

The specific value of emission pollutants produced from HFO is shown below in the table :

Fuel	Greenhouse Gasses			Acid Rain Gasses			
	CO <sub>2</sub> (kg/kWh)	CH <sub>4</sub> (g/kWh)	N <sub>2</sub> O (g/kWh)	CO (g/kWh)	SO <sub>2</sub> (g/kWh)	NO <sub>x</sub> (g/kWh)	NMVOC (g/kWh)
Heavy Fuel Oil (HFO)	0,267	0,036	0,002	0,048	0,503	0,2	0,016
Electricity	0,8						

Table 3.6- Amount of pollutants in (kg/kwh ) production

Proposed Intervention	Energy Savings E (kWh)	Energy Savings $E_1 = E/0,8 \times 0,65$ (kWh)	HFO (kg)	Greenhouse Gasses			Acid Rain Gasses			
				CO <sub>2</sub> (kg)	CH <sub>4</sub> (gram)	N <sub>2</sub> O (gram)	CO (gram)	SO <sub>2</sub> (gram)	NO <sub>x</sub> (gram)	NMVOC (gram)
External wall	34146	65561	5900	17505	2360	131	3147	32977	13112	1049
Radiator tem Control valve	2015	3868	348	1033	139	8	186	1946	774	62
Windows and doors	69665	133757	12038	35713	4815	268	6420	67280	26751	2140
District Heating Substation,	11002	21123	1901	5640	760	42	1014	10625	4225	338
Solar panel	14726			11781						
Lighting	17141			13713						
<b>Total</b>	<b>148695</b>	<b>224310</b>	<b>20188</b>	<b>85384</b>	<b>8075</b>	<b>449</b>	<b>10767</b>	<b>112828</b>	<b>44862</b>	<b>3589</b>

Table 3.7- The quantity of green house and acid rain gasses reduction due to energy



After the all calculation for this case study we came to the conclusions that using the Energy Efficiency Laws , standards for Building and disposition we came to the very good results .In the table below we give from excel calculation the results for all building segments , how much Annual energy is saving for using this methodology form after the audit expertise . Facilitating this building and application the measures due to the EE laws and standard we arrived to the several conclusions ;

- Specific load [kwh/m<sup>2</sup>] is decreasing 95% level

**Table 3.8 – Calculation of Annual Energy saving for all structure of Buildings elements**

Proposed Intervention	Existing Condition Layers	Proposed Intervention Add Layers	Area (m2)	U(old) (W/m²K)	U(new) (W/m²K)	Design Transmission Path (existing) (W)	Design Transmission Path (after Interventions) (W)	Energy Savings (W)	Annual Energy Saving (kWh)
External Wall	Wall 1	Façade (2cm)  Polystyrene (8cm)	127,26	1,993	0,359	27589,1	3480,2	24108,9	34146,4
	Wall 2		40,66	3,205	0,385				
	Wall 3		75,80	4,513	0,399				
Windows Doors	Aluminum window, door	PVC windows and doors	262,2	5,2	1,9	51818,6	18933,7	32884,9	46576,1
Losses - Air Infiltration						32604,0	16302,0	16302,0	23089,1
District Heating Substation		DH substation insulation pipes						3500	4957,2
		Repair of outdoor temperature control, temperature control panel ( assumed 3% of total heating load)							6044,5
Radiator temperature control valve ( assumed 1% of total heating load)									2014,8
Lighting									17141,3
Solar Thermal Energy (solar panel 14 m²)									14726
Total									148695



Proposed Intervention	Surface (m2)	Annual Heating load (kWh)	Specific Heating load (kWh/m2)	Annual Energy savings (kWh)	Annual Energy saving (€/year)	% of energy savings	Unit Cost (€/m2)	Total Cost (€)	NPV (€)	Payback Period (years)	IRR (%)
Existing condition		201483,1	259,3								
External wall insulation	243,7	167336,8	215,4	34146,4	2390,2	16,9	30	7311,6	16156	3,1	32,6
Windows, doors, air infiltration	262,2	97671,5	125,7	69665,3	4876,6	34,6	130	34091,2	36095	7,0	20
District Heating Substation	PI	92714,3	119,3	4957,2	347,0	2,5		400	2496	1,2	15
	TCP	86669,8	111,5	6044,5	423,1	3,0		4500		0,7	
Radiator Con. valve		84655,0	109,0	2014,8	141,0	1,0		700		0,3	
Lighting				17141	1097,0			536		0,5	
Solar panel	14			14726	1325,3		500	6000	7013	4,5	22%
<b>Total</b>				<b>148695</b>	<b>10600</b>			<b>53538</b>		<b>5,1</b>	

**Table 3.9: Total cost investment, simple payback period and IRR**

General conclusions for this case study and methodology used ;

Total cost of investment **53,538.00 €** with Payback period **5,1 year**. Internal Ratio of Return is satisfying the investment for this Building and this complete calculation methodology.

- In order to increase the energy savings of energy conservation in the building, we recommended the following energy efficiency measures:
  - External wall thermal insulation** – with this EE measures, the annual energy savings will be 16, 9 % of annual heating load and the payback period will be 3, 1 year.
  - Replacing windows and doors** - the annual energy savings will be 34, 6 % and the payback period will be high 7 years, due to high cost of investment.
  - District Heating substation** – annual energy savings will be 2,5 % for insulation pipes and 3,0 % for temperature control panel and regulation valve respectively the payback period will be 1,2 and 0,7 years

- **Lighting** - payback period is 0,5 years
  - **Solar Panel** – payback period 4,5 years
2. The repair of temperature control panel, outdoor thermo sensor and automatic valve in DH substation is necessary in order to control the indoor room temperature depend from the outdoor (the energy savings is assumed to be 3 % of heating load).

*Generally, the total annual energy savings due to proposed intervention is 148695 kWh or 10600 €/year with a total investment 53538 € and payback period 5, 1 years.*

#### **4. CONCLUSIONS AND RECOMANDATION**

##### **General:**

- This paper study research and methodology used are compatible with the European Energy legislation and Kosovo as a part of the obligation from European Union(EU).
- Using the Energy Efficiency Laws on Increasing the Sustainability refurbishment of building stock in Kosovo and strategic plan of implementation can be useful for stimulation on creating a new jobs on contraction sector.
- Analyzing the comparative calculation in this two case study, we achieved the Objectives goals of this research.

##### **Recommendation:**

- Increasing quality of living approach in Kosovo, in accordance with Sustainable Refurbishment of building stock and improving the Energy Efficiency legislation in Republic of Kosovo in comparison with the European Energy Efficiency directives on Energy Building Performance (EPB) must be applicable in the practice.
- Concept for Sustainability Refurbishment of building stock must be improved concretely in the practice not to be the tabby theme in the future.
- Stakeholders and all the party, policy and legislation must create the network which can be very hard and connection with economic impact and development of Kosovo in construction sector.
- Good practices from EU –legislation, training programs and research on this field must be followed and implemented in Kosovo.
- Real Estate sector in Kosovo must be include like very hard economic point to the Market and the role of investment from banking sector (EBRD , World Bank, )and another donator for this sector of building are very important for improving the all strategic plan and implementation due the Kosovo policy and regulation.
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# Financial justification of energy improvements in buildings

Igor Pšunder

Marko Soršak

University of Maribor, Faculty of Civil Engineering, Transportation Engineering  
and Architecture, Slovenia

E-mail: igor.psunder@um.si

## Abstract

Energy efficient building and energy efficient renovation of building are key guiding principles in building projects in the last few years. The costs of energy efficient improvements in building are still very high; therefore, particularly renovations of buildings are usually partially accomplished. Investor is faced with a decision whether energy improvements should be done on external walls, roof assembly, floorboards, windows or HVAC systems. Each of these improvements can save up to 20 or even 30 % in heating cost. However, saving in cost of heating is not answering the question of financial justification of investment.

The present article deals with financial justification of investment in energy improvement of external walls, roofing systems, windows and heating assemblies. As required rate of return affects financial justification of an investment, we deal with influence of required rate of return on financial justification of energy improvements in buildings. In the era of record low interest rates and consequently low required rates of return many investments seem to be financially justified, but in case of increasing interest rates and consequently increasing required rates of return the analyses could result opposite indications. This will affect more improvements with longer economic useful life than those with shorter one.

Results of the research are explaining when savings in cost of energy due to better energy efficiency of building are financially justified. Presented models and findings could be used in further researches but also adopted for use in the practice.

**Keywords:** energy efficient building, improvements costs, running costs, useful life, required rate of return.

## **1. Introduction**

Buildings in Europe contribute 30% of greenhouse gases emissions by electricity consumption and heat generation (EEA, 2007). Potentials for reduction of energy consumption and GHG are very high at buildings. The building envelope determines the energy exchange between outdoor and indoor spaces hence governs the overall energy performance of the building (Sozer, 2010). Significant reductions in energy demand can be achieved by promoting low-energy buildings. This currently largely untapped potential offers significant opportunities to reach the Kyoto protocol objectives (Jakob, 2006).

In their article, Schnieders and Hermelink (2006) suggest that passive houses offer a viable option to meet the remaining energy demand only with renewable sources, within the boundaries of availability of renewable energy and affordability. Sartori and Hestnes (2006) showed that operating energy represents by far the largest part of energy demand in a building during its life cycle. The results of research conducted in Switzerland by Jakob (2006) showed that costs of heat energy and distribution could be reduced by construction energy-efficient building as demands of heating are reduced. Economic profitability in most cases can be seen already at execution of heat insulation (walls, ceilings and cellars) on before non-isolated building according to the price of energy products in a longer period. Procedure of defining such an envelope is quite wide and complicated process as many independent factors have impact on energy efficiency. Audenaert, De Cley and Vankercckhove (2008) established based on inspection of eleven existing apartment buildings that the most economic-efficient building in Switzerland is low energy house. Standard, low energy and passive houses were compared in the survey. They have established that low energy house costs 4% more than standard house and that passive house is 16% more expensive.

The results show that has been passive house in comparison with standard building economic more efficient also in the Mediterranean climate. Research made by El Ahmine Boukli Hacene and Eddine Chabane Sari (2011) show that it is justified to invest in passive house. The results have shown that investment in timber passive house can be assimilated to standard brick-concrete buildings after 10 years. Initial investment in passive house is 15% higher than standard. Daouas, Hassen and Aissia (2010) have studied the most economic-efficient insulation thickness for climate zone in Tunisia and found investment refund period in insulation of facade. It was ascertained that the most economic-efficient facade thickness is 5.7 cm with regard to life-cycle cost analysis in 30 years. In Greece, thermal insulation (in walls, roof and floor) and low infiltration strategies reduced energy consumption by 20-40% and 20% respectively. According to the same study, external shadings (e.g. awnings) and light-colored roof and external walls reduced the space cooling load by 30% and 2-4%, respectively (Balaras, Droutsa, Argiriou, Asimakopoulos, 2000).

## **2. Energy efficiency of building frames**

Pšunder et al (2017) state that energy-efficient buildings have to have correct architectural design. Basic aim of energy-efficient building design is exploitation of renewable energy sources, especially building has to be designed to exploit as much as possible energy as climate or solar exposure, air and ground heat – temperature difference exploited by HVAC systems. In combination with correct architectural design and use of low-energy materials and technologies apartment building uses less energy products for heating or cooling.

Primary importance by designing an energy efficient building is appropriate building orientation, form factor, exposure to solar radiation, quality and share of glazing have to be selected according to macro and micro location climate data, beside technical characteristics. Proportion of glazing (share of glazed surfaces in surface of individual building components) has already been known from studies which show the most favorable proportion at certain thermal conductivity of walls according to energy demand for heating and cooling (Žegarac Leskovar, V., Premrov, M., 2011). An appropriate building design of can reduce the energy usage through day lighting, reduced HVAC loads, etc. (Capeluto, 2003).

In their research, Pšunder et al. (2017) simulated annual heat demand for numerous combinations of wall system, roof construction, floor construction and glass surface. In the research, they have changed U value and consequently costs of envelope to each of the parameters. Later U value of individual parameter was changed gradually to close in U value in practice known as U value for passive houses. Steps by which U value was reduced especially at floor and roof construction are quite large. Each parameter was also cost evaluated according to U value and its decrease. Costs of individual parameter were acquired from one of Slovene companies, which have long tradition and experiences at construction of timber buildings. In the research useful life of 30 years were presumed for all short-term components. As we face vast difference in the useful life of built-in components, this should be considered in practical implications of the findings of the mentioned research. For example, if we invest in the heat-pump, the useful life up to 20 years can be expected, but for windows useful life of minimum 30 years is foreseen, but with sturdier frame materials, like aluminium, window frames last even longer.

### 3. Importance of the discount rate and the economic useful life

Feasibility of investment in improvements of energy efficiency is usually calculated with net present value or similar method based on discounted cash flows. By net present value, the investment in energy improvement is compared to the present value of expected future cash flows from savings arising from this improvement. Future cash flows are discounted to the time of the investment for improvements.

Most important factor in calculating the present value of future cash flows is the discount rate. If it were 0, calculation of the net present value would be reduced only to the addition and subtraction of cash flows, without considering the time value of money. As described by Pšunder and Cirman (2011) the discount rate determines »the cost of funds« (to be precise, the required rate of return) which an investor demands for a certain investment in accordance with the risk associated with the investment and it has a profound impact on the net present value. A higher discount rate results in a reduction of the net present value, whereas a lower one results in its increase. Along with an increase in the discount rate, the net present value decreases. The discount factor used in this process must reflect the total required return on the investment position – both income and capital appreciation (depreciation) – as well as the degree of risk associated with the investment (Riggs, 1996).

Pšunder and Cirman (2011) state that the differences between the discount rates would lead to significantly different results when used to evaluate the same investments. The authors further write that the contemporary theory of the determination of the discount rate favours a more precise definition of the discount rate. When wasting (depreciating) assets are analysed, the capital recovery premia must be taken into account. As discount rate does not include capital recovery, the changes in the value of the improvements should be considered in the residual value at termination of the improvement.

In case of investment in energy improvements of buildings, the improvements (external walls, roof assembly, floorboards, windows or HVAC systems) are used until the end of their economic useful time. At the end of economic useful life, the residual value equals 0 or is due to removal cost even slightly negative. In such cases, usually it is presumed that residual value is equal 0. Presuming also that cash flows or potential cash flows from savings arising from the investment are constant (CF), the calculation of net present value (NPV) can be simplified to equation 1:

$$NPV = -I_0 + CF \cdot \sum_{i=1}^n \frac{1}{(1+r)^i} \quad (1)$$

In the equation stands  $I_0$  for investment in improvements of energy efficiency,  $r$  for discount rate and  $n$  for economic useful life on an asset. Other denotations are explained in the previous text.

Geometrical sequence in the equation can be rewritten as years' purchase single rate, which is presented in the equation 2:

$$NPV = -I_0 + CF \cdot \frac{(1+r)^n - 1}{(1+r)^n \cdot r} \quad (2)$$

When analysing investment in energy improvements of a building, initial investment, expected cash flows or potential savings and estimated economic useful life are known, but one of the key factors is certainly the discount rate. A different discount rate can reposition an investment with known cash flows from successful to unacceptable. The impact of the discount rate vastly increases with the economic useful life of the investment. The impact of the discount rate on the factor of the present value of future cash flows with regard to the economic useful life is shown in Figure 1.

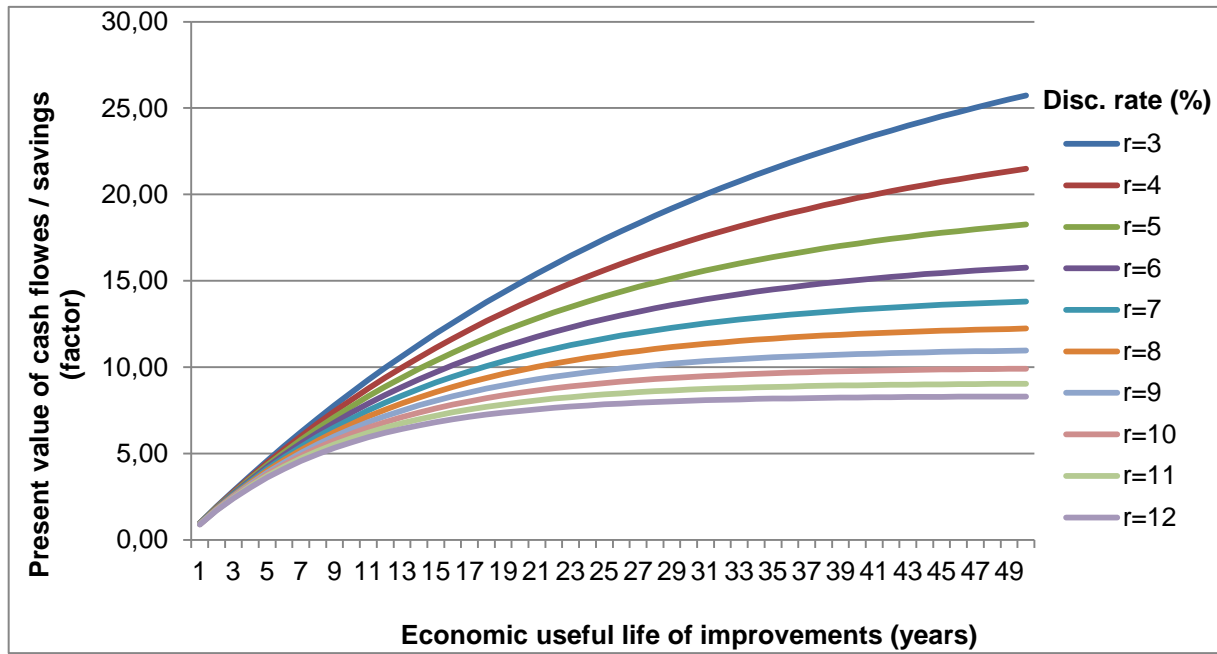


Figure 1: Factor of the present value of future cash flows or savings in relation to the discount rate ( $r$ ) and the economic useful life of an improvement ( $n$ )

Higher risk can be caused by uncertainty of technical solutions and their price, by not exactly calculable savings, but above all by uncertainty of economic parameters (e.g. prices of electricity) etc. Higher risk involved in the investment cause higher discount rate. As seen from the Figure 1 the higher discount rate diminish the present value of future cash flows or savings. E.g. present value of one euro constantly saved over 30 years is 8,06 euro at discount rate of 12 %, but almost twice as high at discount rate of 5 %. In other words, investment in the improvements of energy efficiency can be much higher if lower risk is involved. At the same time, present value also increases with economic useful life of the improvement. Present value of one euro constantly saved over period of 30 years (at the discount rate of 5 %) is almost 50 % higher than the present value of one euro constantly saved over 15 years. Thus, investments with longer economic useful life are more economically justified than that with shorter useful life.

Thresholds of feasibility of investment for constant cash flow or savings over economic useful life of investment are presented in the Table 1. Simulated discount rates range between 3 and 15 % and economic useful life applied is between 5 and 50 years with increment of 5 years.

Discount rate (%)	Economic useful life (years)									
	5	10	15	20	25	30	35	40	45	50
3	4.58	8.53	11.94	14.88	17.41	19.60	21.49	23.11	24.52	25.73
4	4.45	8.11	11.12	13.59	15.62	17.29	18.66	19.79	20.72	21.48
5	4.33	7.72	10.38	12.46	14.09	15.37	16.37	17.16	17.77	18.26
6	4.21	7.36	9.71	11.47	12.78	13.76	14.50	15.05	15.46	15.76
7	4.10	7.02	9.11	10.59	11.65	12.41	12.95	13.33	13.61	13.80
8	3.99	6.71	8.56	9.82	10.67	11.26	11.65	11.92	12.11	12.23
9	3.89	6.42	8.06	9.13	9.82	10.27	10.57	10.76	10.88	10.96
10	3.79	6.14	7.61	8.51	9.08	9.43	9.64	9.78	9.86	9.91
11	3.70	5.89	7.19	7.96	8.42	8.69	8.86	8.95	9.01	9.04
12	3.60	5.65	6.81	7.47	7.84	8.06	8.18	8.24	8.28	8.30
13	3.52	5.43	6.46	7.02	7.33	7.50	7.59	7.63	7.66	7.68
14	3.43	5.22	6.14	6.62	6.87	7.00	7.07	7.11	7.12	7.13
15	3.35	5.02	5.85	6.26	6.46	6.57	6.62	6.64	6.65	6.66

Table 1: Thresholds of feasibility of investment – multiplier of constant annual cash flow or savings

#### 4. Discussion and conclusion

Energy efficient building is key guiding principle in building projects lately. As the costs of energy efficient improvements in building are still very high, investor is faced with a decision whether energy improvements should be done on external walls, roof assembly, floorboards, windows or HVAC systems. Each of these improvements can save up to 20 or even 30 % in heating cost. However, as the mentioned improvements have different economic useful life and are connected with different uncertainties and risks, the euro invested in different improvements will not yield the same return.

Economic useful life of energy improvements vary from floorboards insulation, which economic useful life equals lifetime of the building, over brick and stone walls that economic useful life could exceed 100 years, roofing with slate that last over 50 years, windows, which last 30 to 50 years according to material used, to HVAC, that usually 20 years or less. Insulation for walls and roofs usually correspond with economic useful life of the building component. However, older insulations can be functionally obsolete although physically still in acceptable condition.

As described in the article, improvements with longer economic useful life are more feasible than those with shorter one. Accordingly, investments in building components are generally more economically justified than investments in HVAC, presuming equal yearly savings. However, we cannot overlook the risk connected with the improvement. Higher risk involved diminish present value of the savings arising from the investment. There is no general rule which improvement carries less risk, but improvements in losses of energy, which can be achieved by additional insulation, are associated with very low risk rate.



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# **Intergenerational position adjustment problems sustained coexistence of young people with parents**

Sara Pavšič

Student at Nova University, European faculty of Law, Slovenia

E-mail: [sara.pavsic@t-2.net](mailto:sara.pavsic@t-2.net)

Bojan Grum

European faculty of Law, Nova University, Slovenia

## **Abstract**

The reasons for remaining with parents for a long time are different, but they intertwine and connect. Extended stay with their parents on the one hand provides comfort and brings certain advantages, on the other hand is the result of the economic crisis, in which young people find themselves. More young people are unemployed and more difficult is to get a regular job, which is one of the reasons for the inability of credit and extension education. Even the real estate market for young people has become difficult to access and difficult to participate in. Young people also have become vulnerable social group in all areas and should therefore reasonable to pay more attention to young people. Young people become departure from home more and more difficult, which also brings negative consequences, such as the disposal of the autonomy and independence and for the loss of their own families and fertility. Relations between parents and children are becoming more friendly and democratic, thus losing parental authority. Extended stay young with their parents is becoming increasingly alarming. It affects both the young and their parents. The survey, which was conducted through a questionnaire which was intended only for parents whose adult children still live with them, it was examined the impact of the prolonged coexistence of parents and how they actually experience, what is the relationship between them, etc. 100 parents with young-adult participates in the research. It was found that the surveyed parents want their children to continue staying with them, move away and become independent. A majority also believes that despite the coexistence of privacy. Conflicts between them and their children who are staying with them, seldom coming, but when they occur, are the main reason these household chores and supervision and authority of parents or children. Despite the friendly relationship they have, they interviewed parents in the majority indicated that they still have authority over them, but only partially. The reasons why adult children remain in the parental home a long time are different. The main reasons are mentioned studies and financial dependence and the comforts of home and parents' financial dependency of children from them. They also believe that the state with the housing of young people is not engaged and that it is not youth-friendly.

**Keywords:** Young adult, Coexistence, Slovenia, Family relations, Real estate market

## 1. UVOD

V Sloveniji, kot tudi v mnogih drugih državah po svetu, vse več mladih ostaja dalj časa pri svojih starših (Mohorič, 2010). Razlogi za to so različni, vendar se ti med seboj prepletajo in povezujejo. Podaljšano bivanje pri starših na eni strani omogoča udobje in prinaša določene ugodnosti, po drug strani pa je posledica ekonomske krize, v kateri so se mladi znašli. Vse več mladih je brezposelnih in težje dobijo redno zaposlitev, kar je eden izmed razlogov za kreditno nesposobnost in podaljševanje izobraževanja. Brezposelnost mladih predstavlja veliko globlji problem, saj za sabo potegne probleme, ki se dotikajo različnih področij, kot so izobraževanje, finančni položaj, stanovanjsko področje, družinsko področje itd. Vidimo torej, da gre za neki »začaran krog«, v katerem so se znašli mladi in ga poskušajo reševati s podaljšanim bivanjem pri izvorni družini. Problem podaljšanega bivanja pri starših je posledica raznih problemov na različni področjih. Zato se je potrebno reševanja stanovanjska problema lotiti skupaj z drugimi področji. Zagotavljanje mladim prijaznejšega okolja, je nujen korak do izboljšanja njihovega položaja v družbi (Mužica, 2012). Mladi so pomemben del družbe, saj predstavljajo potencial sedanosti in prihodnosti. Kljub temu se soočajo z raznimi, že omenjenimi problemi in izzivi. Zato morajo države članice Evropske unije oziroma države sveta, takoj začeti z iskanjem ustreznih rešitev kot tudi promovirati zaposlovanje mladih, njihovo usposabljanje in sodelovanje (Eurofound, 2014, str. 28 (e-vir)). Mladi so pogosto prezrta družbena skupina, za katero po mnenju mnogih, ni potrebno uvajati posebnih ukrepov, kar vsekakor ni na mestu. Če želi država imeti zdravo in povezano družbo, v kateri bodo ljudje produktivno in z veseljem živeli, je potrebno poskrbeti prav za mlade (Izobraževanje mladih, 2010, str. 39 (e-vir)).

Brezposelnost je eden glavnih razlogov za socialno ranljivost mladih, ker ne postavlja samo mladih v neugoden socio-ekonomski položaj, jim zmanjšuje status in ugled v družbi, jih marginalizira, ampak jim pušča tudi dolgotrajne posledice na samopodobi (Socialna ranljivost mladih, 2000, str. 9). Tudi na trgu delovne sile so mladi ena izmed najranjlivejših družbenih skupin, saj jim primanjkuje formalnih delovnih izkušenj zaradi česar težko dobijo zaposlitev. Zelo ranljivi so tudi mladi zaposleni, ki imajo tako nizek dohodek, da so izpostavljeni revščini bolj kot druge družbene skupine (Zaposlovanje mladih, 2013, str. 15-20). Pogosto so mladi najmanj zaščiten del delovne sile (Terbanc, 2005). Mladi so zelo ranljiva družbena skupina tudi na stanovanjskem področju, saj nimajo virov, kot so denar, veščine, informacije, poznanstva itd., ki bi jim omogočala enakovredno sodelovanje na nepremičninskem trgu (Mandič, 2006). Enako meni tudi Filipovič (2005), ki med ranjivejše skupine na stanovanjskem področju uvršča tudi mlade. Ranljivost na stanovanjskem področju je povezana z drugimi področji in sama pogosto ne pride v ospredje, vse dokler ni prevedena v druge oblike ranljivosti, kot sta na primer socialne in psihične težave. Stanovanjska ranljivost ni povezana le z odsotnostjo fizičnega prostora za bivanje, ampak tudi z družbeno in zakonsko dimenzijo. Slednja označuje posedovanje zakonitih pravic za bivanje na nekem ozemlju, stanovanju. Med ranljive skupine sodijo tudi mladi (Grum, 2012).

»Številni mladi se čutijo družbeno odrinjene, marginalizirane, utišane in občutijo znake socialnega brezpravja in apatije« (M. Ule, 2008, str. 255). Šele, ko bodo začutili, da njihove stiske niso le njihova stvar, ampak stvar celotne družbe in njene prihodnosti, se bo lahko pojavil artikuliran kolektivni napor za preseganje marginalnosti. Mladi morajo družbi predstaviti in pokazati, da njihovi problemi zadevajo vse (Ule, 2008). Videti je, da je cena mladosti v sodobnem svetu postala zelo visoka (Ule, 2008).

## 2. DEJAVNIKI PODALJŠANEGA BIVANJA MLADIH PRI STARŠIH

V povprečju se mladi odselijo od doma do svojih poznih dvajsetih ali zgodnjih trideset let, pri čemer moški ostajajo dlje časa pri starših kot ženske. Kljub temu da mladi dalj časa ostajajo pri starših, to v Sloveniji ne predstavlja ovire za poroko in življenje s partnerjem. Odlaslanje z odhodom od izvorne družine je značilnost celotne Evrope (Kuhar, 2007). Izvorna družina je postala udobna baza za spopadanje s težavami prehodov v odraslost. Mladi se v njej lažje spoprijemajo z zahtevami v delovnem okolju in visokem izobraževanju ter obenem rešujejo stanovanjski problem in problem nastanitve (Ule in Kuhar, 2003).

Podaljšano bivanje pri starših lahko razumemo kot kolateralno škodo tranzicijske stanovanjske reforme, ki je zelo zmanjšala javni najemni sektor (Kuhar, 2007). Je ambivalentno in predstavlja enega izmed vidikov, ki kaže na negativno spiralo, v katero je ujeta današnja mladina. Tuji izračuni kažejo na negativne

ekonomske in družbene posledice podaljšane stanovanjske nesamostojnosti. Lahko ga označimo s konceptom kulture v smislu družbeno pogojenega fenomena, ki se izraža na ravni vedenj, stališč in vrednot posameznikov, ne da bi izgubil kolektivne značilnosti. Dolgotrajna odvisnost v vsakem primeru krepi medgeneracijski prenos socio-ekonomskih prednosti ali slabosti, kar prispeva k ohranjanju družbene stratifikacije (Kuhar, 2013). Podaljšano bivanje pri starših ne pomeni, da so mladi v celoti odvisni od svojih staršev, ampak gre za ekonomsko odvisnost in socialno neodvisnost. Slednja predstavljata dva nasprotujoča si pojma. Z družbenega vidika so mladi pripravljeni na samostojno življenje in sprejemanje lastnih odločitev, a jim za to primanjkuje finančnih sredstev (Merlik, 2011).

Podaljšano bivanje mladih pri starših pomeni sobivanje vsaj dveh generacij v skupnem gospodinjstvu, kar tvori skupinsko gnezdo. To je spremenilo pravila družinskega življenja, ki uravnavajo medgeneracijska razmerja. Ta niso več tako stroga in so rezultat pogajanj dveh odraslih generacij, saj mladi na eni strani želijo ohraniti čim večjo samostojnost, na drugi strani pa želijo starši še vedno ohraniti vsaj delni nadzor nad otroki (Ule, 2008). Podaljšano sobivanje staršev in odraslih otrok je zato izziv za vse. Težko je tako za odrasle otroke kot za njihove starše. Zato je potrebno postaviti družinska pravila, ki veljajo za vse in jih morajo vsi upoštevati, da se lahko ohranjajo dobri odnosi (Newberry, 2016a), saj predstavlja sobivanje specifično situacijo, ki lahko privede do konfliktov, saj se potrebe odraslih otrok po prostoru razlikujejo od potreb mlajših otrok. Posamezniku pri sobivanju ni zagotovljen avtonomen nadzor nad nepremičnino in ne podpira ustanavljanje samostojnih gospodinjstev odraslih oseb (Vojnovič et al. 1995 V: M. Filipovič, 2005, str. 197).

Pogosto podaljševanje bivanja pri starših ni prostovoljna odločitev mladih, ampak gre za odsotnost alternativ, kar je povezano z razmerami na nepremičninskem trgu, kot so visoke cene nepremičnin, odsotnost ugodnih in varnih najemnih stanovanj itd.. Neprostovoljno bivanje pri starših se lahko uvrsti v obliko nevarnosti brezdomstva (Filipovič, 2005). A podaljševanja bivanja pri starših ne moremo interpretirati zgolj kot strategijo preživetja, kar se kaže v zavezniškem, podpornem in celo prijateljskem odnosu med njimi. To ni le posledica zaostrovanja materialnih in institucionalnih pogojev, temveč emocionalnih in demokratičnih družinskih odnosov (Kuhar, 2013). Svoje bivanje pri starših mladi podaljšujejo tudi zaradi tega, ker jih skrbi za njih. Zavedajo se, da bi z odhodom od doma, staršem povzročili emocionalno napetost in jih prizadeli. Zato je malo verjetno, da bodo takšni otroci kdaj zapustili dom staršev in se osamosvojili. Pri izvorni družini ostajajo zato, ker se ne počutijo pripravljene za stabilno partnersko zvezo in starševstvo (Ule in Kuhar, 2003).

Sobivanje staršev in njihovih odraslih otrok je specifična situacija, ki lahko privede do konfliktov, saj so potrebe odraslih otrok v prostoru drugačne od potreb manjših otrok (Merlik, 2011). Vsak človek potrebuje določen teritorij za svoj obstoj in delovanje. Za posameznika je zelo pomemben zasebni teritorij, ki je namenjen le njegovemu lastniku in tistim, s katerimi ga želi deliti. Sem spadata zasebnost in osebni prostor. Pri sobivanju gre za skupni teritorij, saj člani družine branijo in upravljajo isti teritorij. Ta na eni strani vpliva na identiteto, varnost in svobodo, po drugi strani pa prinaša omejitve posameznikove svobode in zasebnosti (Iršič, 2004).

Podaljšano bivanje pri starših ima tako pozitivne kot negativne učinke na mlade. Zato bi bilo potrebno, da se mladi na negativnih posledicah učijo in izučijo, pozitivne posledice pa nadgradijo ter jih še naprej razvijajo in spodbujajo (Merlik, 2011). A mladim odraslim se podaljšano bivanje pri starših, pogosto očita. Očitki se nanašajo predvsem na tiste mlade odrasle, ki že imajo subjektivne možnosti za osamosvojitev in odselitev, a se za to ne odločijo in tega ne storijo. Zato se vedno bolj postavlja vprašanje o »normalnosti« podaljšane sobivanja (Leban, 2010). Hartley (2016) je v raziskavi ugotovil, da ima podaljšano bivanje pri starših tako prednosti kot slabosti za mlade odrasle. Kot prednost tega se je ugotovila varnost, podpora in družba ter ugodnost bivanja in s tem posledično možnost varčevanja. Kot slabost se navaja nesamostojnost in odvisnost od staršev (Hartley, 2016). Ima močne negativne stranske učinke, saj je povezano s podaljšano odvisnostjo od staršev, negotovostjo glede prihodnosti, zmanjšano avtonomijo in pasivnostjo (Lukič, 2008). Čeprav ne gre podcenjevati pomena odselitve od staršev za razvoj neodvisnosti, se zdi smiselno pozno odseljevanje ovrednotiti tudi iz pozitivne plati. Daljše ostajanje pri starših se lahko na primer razume tudi kot ekonomsko racionalno vedenje, ki zmanjšuje življenjske stroške. To vedenje se

lahko razume kot odmik od potrošniške usmerjenosti in se umesti v trajnostni način družbenega delovanja (Lavrič in Klanjšek, 2011).

Na podaljšano bivanje mladih pri starših vpliva država s svojo politiko ter povezanost staršev in njihovih otrok. Starši in njihovi odrasli otroci prijateljujejo in med njimi se oblikuje pretežno enakopraven odnos. Povezanost staršev in odraslih otrok postaja vse močnejša. Med njimi se vzpostavlja čisto razmerje, kar omogoča bolj odprto in manj formalno komunikacijo. Navedeno je najverjetneje posledica spremenjene funkcije staršev, ki vedno bolj prehaja iz omejevalne v pogajalsko in podporno funkcijo na finančnem, čustvenem, stanovanjskem področju itd. Odnosi v družini postajajo vse manj formalni, kar omogoča lažjo komunikacijo med družinskimi člani. Pogovori postajajo vse bolj zaupni in intimni. Kljub navedenemu v vseh družinah prihaja do nesporazumov in konfliktov. Vendar je v družinah, kjer sobiva več generacij to še pogostejše zaradi različnih pogledov, stališč, interesov, ciljev in vrednot. Konflikti v družini in družbi nasploh so nujno zlo, saj samo tako človek osebno raste, se uči in izpopolnjuje. Pomembno je, da se konflikti konstruktivno razrešujejo, še posebej pri sobivanju več generacij. Vendar so medgeneracijski konflikti vse manj pogosti. V zameno za lagodno življenje doma, mladi sprejmejo določeno mero starševskega nadzora in neodvisnosti ter nesamostojnosti (Knežević, 2010).

Nov fenomen podaljševanja mladosti je LAT<sup>41</sup> faza, ki pomeni življenje skupaj s starši in hkrati ločeno od njih. Zanj je značilno, da mladi živijo pri starših, časovno trajanje tega obdobja je odvisno od trajanja formalnega izobraževanja. Izkaže se, da tudi po končanem izobraževanju in ob zaposlitvi vedno več mladih ostaja doma pri starših. Mnogi bivanje doma kombinirajo z občasnim bivanjem pri partnerju, v študentskem domu itd. Glede na družbeni položaj je ta fenomen nekaj samoumevnega. Mladi si tako pridobijo več izkušenj (Švab V: P. Merlik, 2011, str. 18).

Je novo obdobje »poldružinskega« življenja mladih. Pomeni živeti skupaj s svojim partnerjem in hkrati narazen, v izvorni družini. Postala je vmesna faza med odvisnostjo od izvirne družine in neodvisnim življenjem (Kuhar in Nastan Ule, 2002). Filipovič (2005) navaja enako, in sicer, da mladi imajo partnersko zvezo, ampak ne živijo skupaj, temveč vsak pri svojih starših. Literatura LAT fazo opredeljuje kot vmesno fazo med družinsko odvisnostjo in neodvisnostjo. Pravi, da so razlogi za takšno življenje ekonomski, stanovanjski, zaposlitveni in izobraževalni, lahko pa izhajajo iz osebnih okoliščin, kot so lagodje, nekonfliktnost doma itd. (Leskošek, 1999).

LAT faza različne življenjske aranžmaje, kot so (Leskošek, 1999):

- življenje doma v času podaljšanega šolanja,
- življenje doma po koncu šolanja in vstopu v zaposlitev,
- življenje doma in začasno drugje,
- življenje drugje z rednim obiskovanjem družine in stalno uporabo njenih uslug in storitev.

Dejavniki, ki vplivajo na podaljšano bivanje mladih odraslih pri starših oziroma na odhod od doma, so številni. Po eni strani so ti dejavniki individualni in segajo na mikroraven, kjer je ključna želja posameznika, njegovih virov in izbire, po drugi strani so ti dejavniki strukturni in na makroravni določajo množico priložnosti in ovir, s katerimi se posamezniki srečujejo. Med strukturne dejavnike sodijo značilnosti okolja in pojasnjujejo podobnost vzorcev odhoda od doma v isti družbi in zakaj ter kako se ti med državami razlikujejo (Temeljotov Salaj in Grum, 2015). Individualni dejavniki so značilnosti posameznikov in prispevajo k pojasnjevanju njihove usmeritve k različnim izbiram. Raziskave so pokazale, da so med ključnimi poklicni, zaposlitveni, dohodkovni položaji, partnerstvo in starševstvo, spol in osebna izbira. Ti pojasnjujejo, katere individualne izkušnje so posameznikom skupne in zakaj se posamezniki v istem okolju odločajo različno (Mandič, 2007).

Choroszevicz in Wolf (2010) navajata, da je podaljšano bivanje mladih odraslih odvisno od:

- materialnih možnosti, s katerimi si je mogoče ustvariti lastno gospodinjstvo, med katere prispevata in sta ključna ustrezna zaposlitev in razmere na nepremičninskem trgu,

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<sup>41</sup> Living apart together.

- vključenosti mladih v izobraževanje, saj je čas izobraževanja povezan z daljšim ostajanjem v domu staršev,
- preseljevanja zaradi izobraževanja in zaposlitve, saj majhnost države omogoča vožnjo na delo ali izobraževalno ustanovo, zaradi česar le-ta nastopa kot dejavnik podaljševanja odhoda od doma. Pri tem so pomembne objektivne okoliščine, saj bolj kot so te udobne in ugodne, manjše je zanimanje po odselitvi,
- kulturnih dejavnikov, kot sta pomen izvirne družine in prilagajanje oziroma zagotavljanje neodvisnosti mladih v njej,
- oblikovanje partnerske zveze in lastne družine.

Če se uporabi ponazoritev Avramove (1995), so strukturni dejavniki podaljšane bivanja oder, na katerem posamezniki nastopajo. So družbena, zgodovinska-kulturna danost in prizorišče, kjer posamezniki nastopajo s svojimi viri, izbiri in na katere sami ne morejo vplivati. Ključni strukturni dejavniki so izobraževalni sistem, delovanje trga dela in njegovo sprejemanje mladih, delovanje in razvitost državne blaginje ter trg nepremičnin (Mandič, 2007). Tudi Mandičeva in Gnidovec (1999) pravita, da so strukturni dejavniki danost, na katere posameznik sam ne more vplivati. Navajata, da gre za zgodovinske družbene okoliščine, med katerimi sta najpomembnejši odlaganje starševstva in ustvarjanja lastnih družin ter povečano število samskih gospodinjstev. Pomembne so okoliščine na nepremičninskem trgu, kot so cenovno dosegljiva stanovanja in razpoložljivost.

### 3. VPLIV PODALJŠANEGA BIVANJA NA STARŠE

Sobivanje odraslih otrok in staršev je neprijetno tako za starše kot tudi za mlade. Zlasti je ta faza neprijetna za starše, ki so vanjo prisiljeni in ujeti, saj pričakujejo, da bodo po odhodu otrok od doma, znova razpolagali s svojim časom in uresničili kar zaradi otrok niso mogli (po V. Leskošek, 1999, str. 90). Podaljšano sobivanje vpliva na starše tudi finančno. Zato avtorica meni, da morajo odrasli otroci, ki še bivajo pri starših plačevati najemnino in sami kriti svoje gospodinjske in druge stroške. A pri tem se postavlja vprašanje, kolikšno najemnino zaračunavati, saj si tržne najemnine ne morejo privoščiti, sicer bi se že odselili. Z najemnino naj bi pokrili vsaj svoj del stroškov. A velikokrat so odrasli otroci, ki bivajo pri starših brez dohodkov ali so ti zelo nizki. Slednji naj bi svoje stroške pokrivali z opravljanjem gospodinjskih in hišnih opravil (Newberry, 2016b).

Na podlagi podatkov iz Eurobarometra bi lahko sklepali, da starši podaljšane bivanja odraslih otrok po večini ne dojemajo kot problem. Matere teh otrok sodijo v generacijo, ki si je želela čim prej osamosvojiti. Od doma staršev so odšle z jasnimi predstavami o tem, kaj želijo v življenju doseči. Danes te iste ženske čutijo, da so razmere za njihove odrasle otroke drugačne in bolj tvegane. Mladi naj bi bili po njihovem mnenju psihološko šibkejši in z manj življenjskimi izkušnjami. Mladi naj bi bili manj sposobni za reševanje finančnih in drugih problemov, zato otroke podpirajo, če želijo ostati doma in da se osamosvojijo v družini (Ule, 2008). Po mnenju Newberry (2016) lahko odrasli otroci dobro in uspešno sobivajo s svojimi starši, a je naloga staršev, da uvedejo družinska pravila. Večina teh misli, da ta niso potrebna, saj gre za sobivanje odraslih oseb različnih generacij. Meni tudi, da otrok ne gre več smatrati kot otroke, ampak kot odrasle osebe, kar je zelo težko in jih to zelo malo stori, saj hočejo svojim otrokom pri vsem pomagati. To privede do tega, da se otrokom jemlje samostojnost in odgovornost. Tudi mišljenje, da se bodo odrasli otroci odselili, ko bo za to primeren čas, je napačno. Določiti je potrebno časovni okvir in jim pomagati, da dosežejo samostojnost (Newberry, 2016a).

Mandičeva na podlagi podatkov iz leta 2003 pravi, da v starostni skupini od 18 do 34 let, s starši živi 48 % mladih. Pri slednjem gre za mlade, stare med 25 in 35 let (Lavrič in Klanjšek, 2011). V letu 2008 je na območju EU kar 46 % mladih, starih med 18 in 34 let še živelo pri svojih starših. Slovenija je ena izmed evropskih držav, ki imajo najvišji odstotek mladih, starih med 18 in 34 let, ki še živijo pri starših, saj jih s starši živi skoraj 70 % (Coroszewicz in Wolff, 2010). Po podatkih Svetovne raziskave vrednot in Mladine 2010 je leta 2010 odstotek mladih iste starostne skupine narasel na 65,3 % (Naterer in Lavrič, 2011). Kar 90 % mladih v starostni skupini med 18 in 24 let živi s svojimi starši. Razlog za tako visok odstotek je najverjetneje izobraževanje. Ta odstotek se nekoliko zmanjša pri mladih, starih med 25 in 29 let, saj jih pri starših biva okoli 60 %, kaj je še vedno veliko. V starostni skupini med 30 in 34 let s starši živi 40 %

moških in tretjina žensk (Kuhar, 2012). Leta 2013 je v Sloveniji živel 141,362 mladih, starih med 25 in 29 let (Eurostat, 2015a). Od tega jih je 60,3 % še živel v skupnem gospodinjstvu s starši (Eurostat, 2015b). Kot je razvidno, rezultati že opravljenih raziskav niso optimistični in so celo zaskrbljujoči.

Razlogov za ostajanje mladih odraslih otrok pri starših je veliko. 26 % Evropejcev, starih med 15 in 30 navaja, da živijo skupaj s starši, ker ni na voljo cenovno ugodnih stanovanj, 11 %, da živijo pri starših zaradi stanovanjskih ugodnosti, 10 % jih živi doma, da se bodo čez čas poročili oziroma odselili s partnerjem. Le 3 % jih živi doma, ker finančno skrbijo za svoje starše (Temeljotov Salaj in Grum, 2015). Poleg omenjenih razlogov na podaljšano bivanje pri starših zelo vplivata tudi negotovo zaposlovanje in brezposelnost mladih ter izobraževanje. Po podatkih Eurostata je izobraževanje glavni razlog za bivanje mladih, starih med 18 in 24 let, pri starših, saj je takih kar 77 %. V starostni skupini med 25 in 34 let jih zaradi izobraževanja živi pri starših le še 29,3 % (Coroszewicz in Wolff, 2010). Pri slednjih je najverjetneje glavni razlog ostajanja doma brezposelnost, saj je po izvedeni raziskavi vseh 9 % brezposelnih mladih leta 2008 v Sloveniji še živel pri starših (Coroszewicz in Wolff, 2010). Po podatkih Zavoda za zaposlovanje je bilo do konca leta 2008 registriranih brezposelnih nekaj več kot 8.000 mladih, starih med 18 in 24 let in skoraj 10.000 mladih, starih med 25 in 29 let. Do oktobra 2015 se je ta številka nekoliko povečala, saj je registrirana brezposelnost mladih, starih med 25 in 29 let oktobra narasla na skoraj 16.000, mladih, starih med 15 in 24 let na nekaj več kot 10.000 (ZRSZ, 2015). Ne samo brezposelni, tudi zaposleni mladi, stari med 18 in 34 let, še v velikem odstotku živijo v skupnem gospodinjstvu s starši. To lahko razberemo iz podatkov Eurostata, saj kar 59,2 % mladih iste starostne skupine, zaposlenih za nedoločen čas, še živi pri svojih starših. Odstotek je nekoliko manjši pri mladih, zaposlenih za določen čas, saj je takih skoraj 41 % (Eurostat, 2015c). Od vseh mladih brezposelnih, starih med 18 in 34 let, jih je v letu 2014 pri starših živel le 17 % (Eurostat, 2015d). Iz navedenega se lahko sklepa, da vsaka zaposlitev še ne vodi v finančno samostojnost in samostojno življenje. Po podatkih istega vira živi s svojimi starši polovica mladih, ki se izobražuje, in dve tretjini mladi brezposelnih.

Kljub velikemu številu strokovnih raziskav težko najdemo odgovore, kako podaljšano sobivanje vpliva na starše, saj so te raziskave v veliki meri namenjene le preučitvi dejavnikov le-tega in vpliva na mlade. V njih tako ni mogoče zaslediti podatkov oziroma težko zasledimo podatke o tem, kako to vpliva na starše, kako starši doživljajo podaljšano bivanje otrok pri njih, ali se s tem strinjajo ali ne, ali želijo da otroci sobivajo z njimi itd. Ne najdejo se niti odgovori na vprašanja nadzora, avtoritete, odgovornosti in odnosov v družini. S tem povezanimi zadevami so bile narejene razne raziskave s strani študentov, ki dajejo vsaj približno predstavbo o omenjenem.

Tega sta se v strokovni raziskavi dotaknila tudi Grum in Temeljotov- Salaj, ki sta jo izvedla leta 2015 (Grum in Temeljotov Salaj, 2015). Ugotovila sta, da samski v večji meri živijo pri svojih starših kot tisti, ki so v zvezi in da prihaja do večjega nezadovoljstva tistih, ki živijo s starši ter da bi v lastnem domu imeli večji občutek samostojnosti in zadovoljstva. Naslednja raziskava je pokazala, da si mladi, ki živijo skupaj s starši, ne glede na to, da se s starši dobro razumejo, želijo v svoje stanovanje. Mladi se po odselitvi v svoj dom tako ne počutijo nič bolje kot pri starših, kar jasno pokaže, da bivanje pri starših ne pomeni bistvene prikraščenosti v čustvenem smislu (Mavrič in Klanjšek, 2011).

Novak in Polanec (2009) sta na podlagi izvedenih intervjujev ugotovili podobno, in sicer, da dober odnos s starši ne vpliva na ostajanje doma ali odselitev od izvirne družine. Kljub dobrim odnosom vendarle prihaja do manjših nesporazumov in konfliktov, kar je predvsem razumljivo. To je pokazala tudi manjša raziskava, katere podatki kažejo na to, da do konfliktov prihaja, vendar poredko in da ti niso intenzivni ter da so glavni razlog konfliktov gospodinske obveznosti, saj starši zahtevajo odgovornost pri le-teh (Marinkovič, 2013). Starši so vedno pripravljeni preživljati in poskrbeti za svoje otroke, ne glede na starost. To je ugotovila tudi Mohorič (2010), saj jim starši želijo omogočiti, da najprej dobijo zaposlitev in redni dohodek, kar je dobra podlaga za samostojno življenje. Po mnenju intervjuvancev je pozitivna stvar podaljšane bivanja pri starših to, da je prihranjenih veliko stroškov, ni potrebno skrbeti za hrano in gospodinjstva opravila. Starši v zameno za vse navedeno ne zahtevajo veliko. Veseli so, če jim mladi občasno pomagajo pri hišnih opravilih, vendar jih v to ne silijo, saj se zavedajo, da je avtoriteta izgubila svojo moč.

## 4. METODOLOGIJA

Raziskava je bila izvedena na območju Republike Slovenije, s pomočjo anketnega vprašalnika. Anketni vprašalnik je bil objavljen na socialnem omrežju Facebook in na raznih forumih spletne strani Med.Over.Net. Anketa je bila na spletu objavljena dva meseca, in sicer od 01.03. 2016 do 01.05.2016. Vsi anketni vprašalniki niso bili veljavni, zato se jih je za raziskavo uporabilo samo 100. Anketiranci so bili stari med 35 in 70 let. Z dobljenimi rezultati se je ovrglo ali potrdilo postavljene hipoteze. Cilj raziskave je bil preučiti in analizirati vzroke ter posledice podaljšanega bivanja mladih pri starših, največji poudarek je bil na tem, kako podaljšano sobivanje vpliva na starše, na odnose med starši in njihovimi otroki. Preučevalo se je, kako starši sobivanje z otrokom doživljajo, ali se s tem strinjajo ali ne, ali želijo, da otroki sobivajo z njimi, ali jih bivanje z odraslimi otroki moti itd. Preučevalo se je, ali imajo starši še vedno nadzor in avtoriteto nad odraslimi otroki, ki živijo pri njih, zakaj največkrat prihaja do konfliktov in ali sobivanje vpliva na pomanjkanje zasebnosti. Cilji raziskave je bilo pogledati, kaj starši menijo glede pomoči države in reševanja stanovanjskega problema mladih, ali država ponuja dovolj možnosti za reševanje le-tega, kar bi otrokom omogočilo lažjo osamosvojitve od staršev. Ciljna skupina raziskave so bili starši, katerih odrasli otroci še bivajo pri njih. Slaba odzivnost na reševanje anketnega vprašalnika je pri raziskavi predstavljala največji problem. Kljub temu, da smo predvidevali, da bo anketni vprašalnik rešilo veliko več staršev, se to ni zgodilo. Vendar pa, kot navaja Bastič (2006) je lahko tudi majhen vzorec reprezentativen.

Raziskava je zajemala več raziskovalnih hipotez (v nadaljevanju H):

H1: Več kot 50 % anketiranih staršev meni, da zaradi sobivanja otrok, nimajo dovolj zasebnosti.

H2: Kljub dobrim odnosom, ki jih imajo s svojimi odraslimi otroki, si 50 % anketiranih staršev želi, da se ti odselijo in osamosvojijo.

H3: Zaradi sobivanja prihaja do konfliktov, predvsem zaradi razdelitve gospodinskih opravil in finančnih porazdelitev obveznosti.

H4: Starši imajo z odraslimi otroki, ki še živijo pri njih, prijateljski odnos, kar pomeni, da starši nimajo več avtoritete nad njimi.

H5: Glavni razlog za podaljšano bivanje mladih pri starših je brezposelnost oziroma udobje doma staršev.

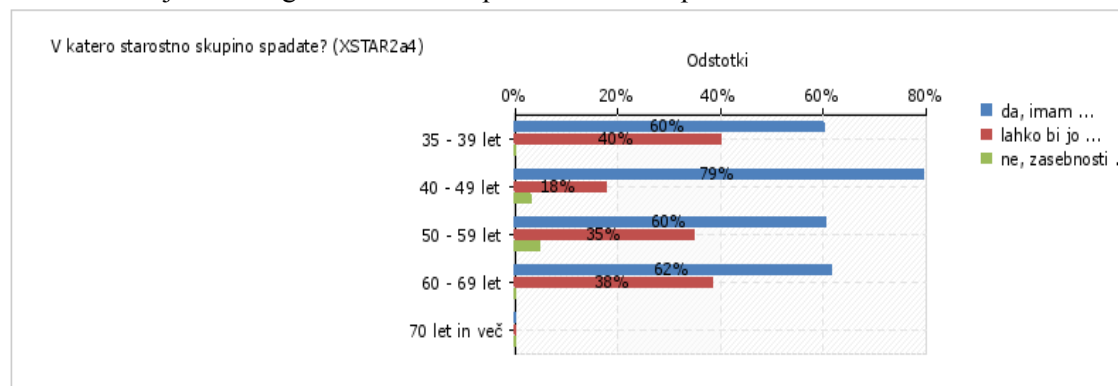
H6: Več kot polovica anketirancev meni, da zakonska regulativa na področju stanovanjske politike ni prijazna mladim, kar posledično vpliva na pozno osamosvojitve mladih.

Vprašalnik je bil sestavljen iz dveh delov, in sicer iz demografskega in splošnega dela. V večini je vseboval vprašanja zaprtega tipa. Nekaj vprašanj je bilo odprtega tipa, kjer so anketiranci odgovore zapisali sami. Poleg demografskih vprašanj, kot so spol, starost, zaposlitveni status, so bila zastavljena vprašanja, ki so se nanašala na to, kako starši doživljajo podaljšano bivanje odraslih otrok z njimi, kako to vpliva nanje, kakšen odnos imajo s svojimi otroki, in kako se država srečuje s stanovanjsko problematiko mladih.

## 5. RAZISKAVA IN INTERPRETACIJA

**H1:** Več kot 50 % anketiranih staršev meni, da zaradi sobivanja otrok, nimajo dovolj zasebnosti.

Graf 1: Mnenje staršev glede zasebnosti po starostnih skupinah



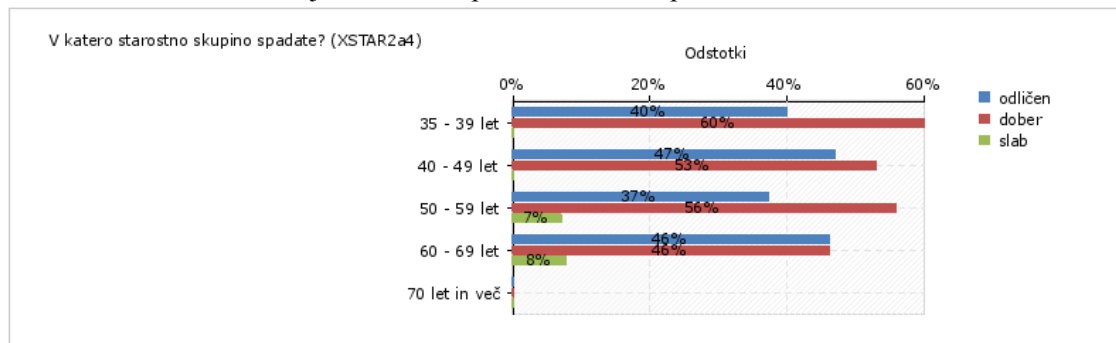


Anketirani starši v splošnem menijo, da imajo dovolj zasebnosti, kljub sobivanju z odraslim otrokom. Do enakega rezultata pridemo, če pogledamo po različnih starostnih skupinah, saj anketirani starši v veliki večini, in sicer nad 60 % menijo, da imajo dovolj zasebnosti. Ostali anketirani starši menijo, da bi jo lahko imeli več, le cca. 5 % jih navaja, da zasebnosti sploh nimajo, kar velja samo za drugo in tretjo starostno skupino. Starši zadnje starostne skupine na to vprašanje niso odgovorili.

Iz navedenega sledi, da hipoteza drži in se potrdi za vse starostne skupine oziroma generacije, razen za zadnjo, za katero ni bilo podanih odgovorov.

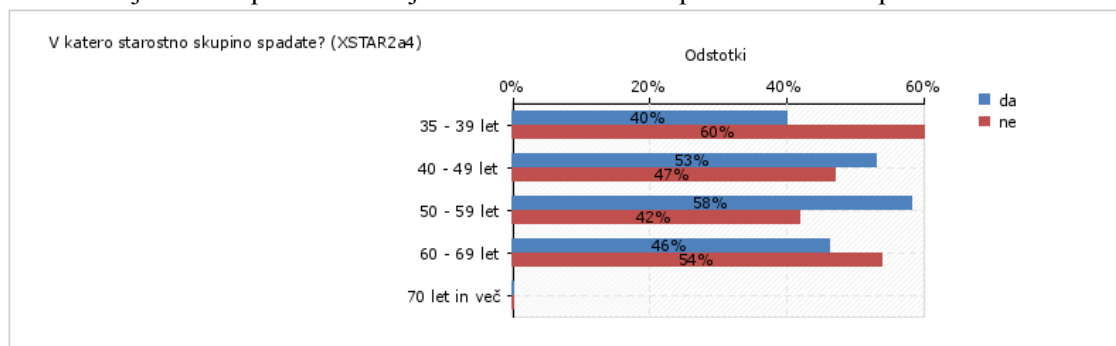
**H2:** Kljub dobrim odnosom, ki jih s svojimi odraslimi otroki, si 50 % anketiranih staršev želi, da se ti odselijo in osamosvojijo.

Graf 2: Odnos staršev in njihovih otrok po starostnih skupinah



V navedeni hipotezi se je predvidevalo, da imajo starši v večini s svojimi odraslimi otroki, ki še živijo pri njih, dober odnos. Kot je razvidno iz zgornjega grafa, se je to potrdilo v vseh starostnih skupinah, razen v zadnji, kjer ni podanega odgovora.

Graf 3: Želja staršev po odselitvi njihovih otrok od doma po starostnih skupinah

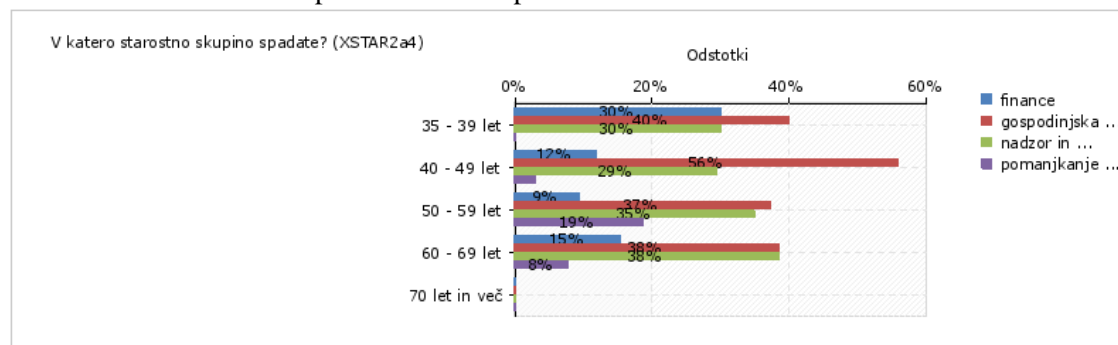


Anketirani starši prve starostne skupine si v 60 % ne želijo, da se njihov otrok odseli od doma. Isto velja za anketirane starše, stare med 60 in 69 let, saj so tako odgovorili v 54 %. Za anketirane starše, stare med 50 in 59 let in starše, stare med 40 in 49 let, lahko rečemo, da si v večini želijo, da se njihov otrok odseli od doma, saj jih je tako odgovorilo več kot 50 % v obeh starostnih skupinah. Za starše, stare 70 let in več nimamo podanega odgovora. Če se anketirane starše gleda kot celoto lahko rečemo, da si večina želi, da se njihovi otroci odselijo od njihovega doma in osamosvojijo, kar smo videli v podpoglavju Interpretacija podatkov pod grafom3. Če pogledamo po starostnih skupinah, vidimo, da si večina staršev iz druge in tretje starostne skupine želi, da se otroci odselijo od doma, za prvo in četrto starostno skupino pa to ne drži.

Če se gleda anketirane starše kot celoto, hipoteza drži in se potrdi. Če anketirane starše razdelamo po starostnih skupinah hipoteza drži samo deloma in se samo deloma potrdi, in sicer za drugo in tretjo starostno skupino, za ostale se hipoteza ovrže.

**H3:** Zaradi sobivanja prihaja do konfliktov predvsem zaradi razdelitve gospodinskih opravil in finančnih porazdelitev obveznosti.

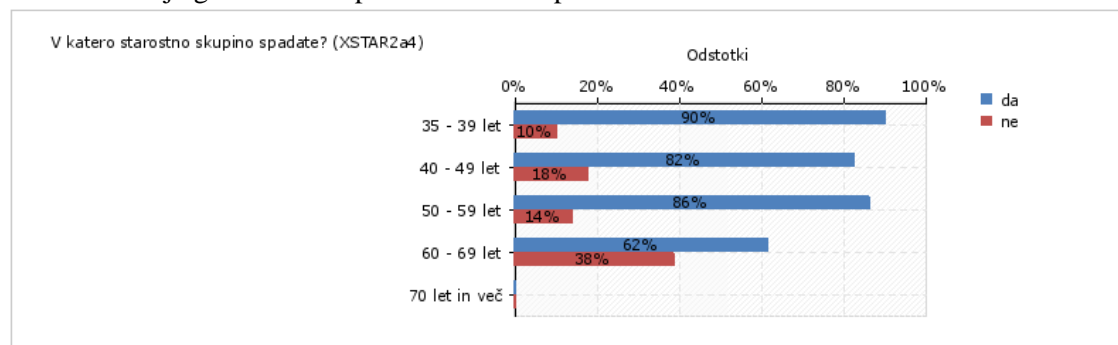
Graf 4: Vzroki konfliktov po starostnih skupinah



V raziskavi se je ugotovilo, da anketirani starši vseh starostnih skupin v večini navajajo, da so redkokdaj v konfliktih s svojimi otroki, ki še bivajo pri njih. Ko do njih pride, je to predvsem zaradi gospodinskih opravil, saj so to navedle vse starostne skupine. Takoj za tem so kot razlog navajajo nadzor in avtoriteto staršev ali otrok. V prvi starosti skupini prihaja do konfliktov zaradi financ, kar si deli mesto s financami. Iz navedenega se sklepa, da hipoteza deloma drži in jo lahko samo deloma potrdimo za vse starostne skupine. Glavni razlog konfliktov po mnenju anketiranih staršev predstavljajo gospodinska opravila ter nadzor in avtoriteta staršev ali otrok, in ne gospodinska opravila in finance. To bi lahko trdili samo za prvo starostno skupino, saj so finance in nadzor dosegle isto število procentov.

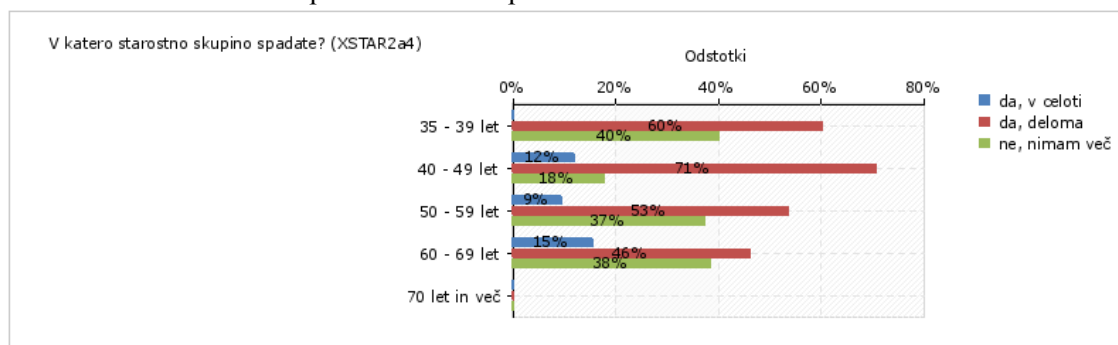
**H4:** Starši imajo z odraslimi otroki, ki še živijo pri njih, prijateljski odnos, kar pomeni, da starši nimajo več avtoritete nad njimi.

Graf 5: Mnenje glede odnosa po starostnih skupinah



Iz grafa je jasno razvidno, da je odnos med starši in njihovimi odraslimi otroki, ki še bivajo pri njih, prijateljski, saj jih tako meni velika večina v vseh starostnih skupinah, razen zadnji, kjer ni podanega odgovora. To smo v hipotezi pravilno predvidevali.

Graf 6: Avtoriteta staršev po starostnih skupinah

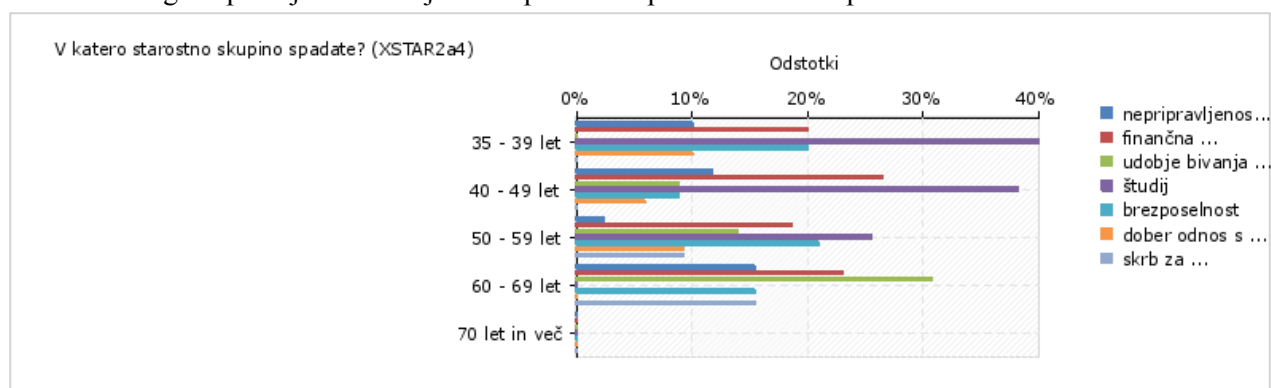


Anketirani starši vseh starostnih skupin imajo po večini le še delno avtoriteto nad svojimi odraslimi otroki, ki še živijo pri njih. Kar v cca. 40 % so v vseh starostnih skupinah navedli, da avtoritete nimajo več, kar glede na prijateljske odnose ne preseneča.

Kot je razvidno, zgoraj navedena hipoteza za vse starostne skupine ne drži in se zato ovrže.

**H5:** Glavni razlog za podaljšano bivanje mladih pri starših je brezposelnost oziroma udobje doma staršev.

Graf 7: Razlogi za podaljšano bivanje otrok pri starših po starostnih skupinah

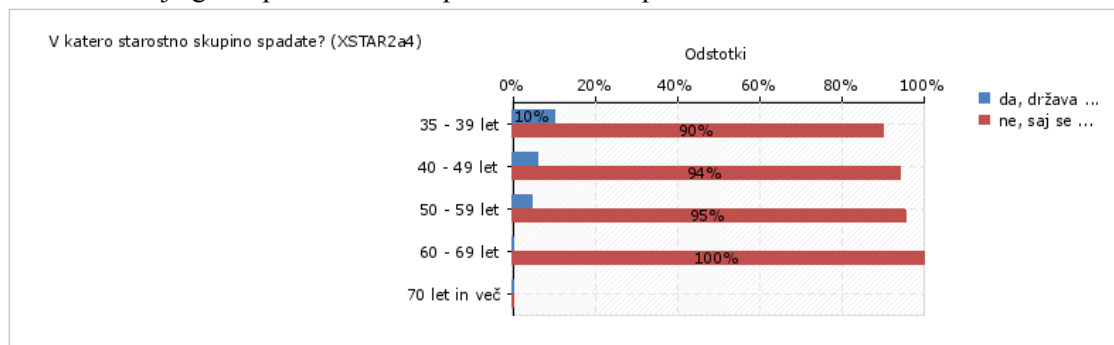


Iz grafa se lahko razbere, da je po mnenju staršev prvih treh starostnih skupin glavni razlog ostajanje njihovih otrok doma, študij. Anketirani starši četrte starostne skupine so v večini kot glavni razlog navedli udobje doma staršev. Za zadnjo starostno skupino spet ni podatkov.

Hipoteza deloma drži. Drži za četrto starostno skupino, za vse ostale se hipoteza ovrže. Glavna razloga tako nista brezposelnost in udobje doma staršev, ampak študij in finančna odvisnost od staršev.

**H6:** Več kot polovica anketirancev meni, da zakonska regulativa na področju stanovanjske politike ni prijazna mladim, kar posledično vpliva na pozno osamosvojitev mladih.

Graf 8: Mnenje glede pomoči države po starostnih skupinah



V vseh starostnih skupinah so starši v 90 % in več navedli, da se država ne ukvarja s stanovanjsko problematiko mladih in posledično na tem področju ni prijazna mladim. Le zelo majhen odstotek v prvih treh starostnih skupinah meni, da država zagotavlja dovolj možnosti na stanovanjskem področju. V zadnji starostni skupini ni podan odgovor.

Iz navedenega se lahko zagotovo trdim, da hipoteza drži in se potrdi za vse starostne skupine, razen za zadnjo, kjer ni podan odgovor.

## 6. SKLEP

Večina postavljenih hipotez je bila z raziskavo samo delno potrjenih. Samo prva in zadnja hipoteza sta bili v celoti potrjeni, četrta hipoteza ni bila potrjena. Prva hipoteza, ki se je glasila, da več kot 50 % anketiranih staršev meni, da zaradi sobivanja otrok nimajo dovolj zasebnosti, je bila potrjena za vse starostne skupine, razen za zadnjo, za katero ni bil podan odgovor. Druga hipoteza se je glasila, da kljub dobrim odnosom, ki jih imajo s svojimi odraslimi otroci, si 50 % anketiranih staršev želi, da se ti odselijo in osamosvojijo. Če pogledamo anketirane starše kot celoto, hipoteza drži in se potrdi. Če anketirane starše razdelamo po starostnih skupinah hipoteza drži samo deloma in se lahko samo deloma potrdi, in sicer za drugo in tretjo starostno skupino, za ostale se hipoteza ovrže. Za zadnjo starostno skupino ni podanega odgovora. Tretja hipoteza se je glasila, da zaradi sobivanja prihaja do konfliktov predvsem zaradi razdelitve gospodinjskih opravil in finančnih porazdelitev obveznosti. Hipoteza deloma drži in jo lahko samo deloma potrdimo za vse starostne skupine. Glavni razlog konfliktov po mnenju anketiranih staršev predstavljajo gospodinjska opravila ter nadzor in avtoriteta staršev ali otrok, in ne gospodinjska opravila in finance. To bi trdili samo za prvo starostno skupino. Za zadnjo starostno skupino ni podanega odgovora. Četrta hipoteza, ki se je glasila, da imajo starši z odraslimi otroki, ki še živijo pri njih, prijateljski odnos, kar pomeni, da starši nimajo več avtoritete nad njimi, se glede na rezultate raziskave ovrže. Za zadnjo starostno skupino ni podanega odgovora. Peta hipoteza se je glasila, da je glavni razlog za podaljšano bivanje mladih pri starših brezposelnost oziroma udobje doma staršev. Hipoteza deloma drži. Drži za četrto starostno skupino, za vse ostale se hipoteza ovrže. Glavna razloga tako nista brezposelnost in udobje doma staršev, ampak študij in finančna odvisnost od staršev. Za zadnjo starostno skupino ni podanega odgovora. Šesta hipoteza, ki se je glasila, da več kot polovica anketirancev meni, da zakonska regulativa na področju stanovanjske politike ni prijazna mladim, kar posledično vpliva na pozno osamosvojitve mladih, drži in se potrdi za vse starostne skupine. Za zadnjo starostno skupino ni podanega odgovora.

V splošnem lahko rečemo, da si anketirani starši želijo, da se njihovi otroci, ki še bivajo pri njih, odselijo in osamosvojijo. Če pogledamo po starostnih skupinah vidimo, da si večina anketiranih staršev iz druge in tretje starostne skupine želi, da se otroci odselijo od doma, kar za prvo in četrto starostno skupino ne drži. Anketirani starši v večini menijo, da imajo kljub sobivanju dovolj zasebnosti. Do konfliktov med njimi in njihovimi otroci, ki še bivajo z njimi, le redkokdaj prihaja, ko do njih pride, sta glavna razloga le-teh gospodinjska opravila ter nadzor in avtoriteta staršev ali otrok in ne finance. To bi lahko trdili samo za prvo starostno skupino. Kljub prijateljskemu odnosu, ki ga imajo, so anketirani starši v večini navedli, da imajo

še vedno avtoriteto nad njimi, ampak samo delno. Vzroki, zakaj odrasli otroci ostajajo v domu staršev dlje časa, so različni. Po mnenju anketiranih staršev sta glavna razloga študij in finančna odvisnost od staršev, kar ne moremo reči za starše četrte starostne skupine, ki v večini navajajo udobje doma staršev in finančno odvisnost otrok od njih. Menijo tudi, da se država s stanovanjsko problematiko mladih ne ukvarja, zato mladim ni prijazna.

Mladi v današnjem času veljamo za ranljivo družbeno skupino. Ker je prihodnost odvisna od mladih ljudi, bo potrebno najti rešitve, ki bodo mladim omogočale boljše in kvalitetnejše življenje. Spremembe bi bilo potrebno uvesti že v izobraževalnem sistemu, kjer bi se zagotavljalo primerno usposabljanje in pridobivanje praktičnega znanja. S tem bi mladi postali konkurenčnejši na trgu dela, saj bi že imeli osnovno praktično znanje in delovne izkušnje. S strani države bi bilo potrebno spodbujati zaposlovanje mladih in varne oblike zaposlovanja, ki bi mladim omogočile, da samostojno in neodvisno zaživijo. Spodbude se sicer že uveljavljajo, a lahko bi jih bilo več. Država bi morala uvesti in najti še kakšne ukrepe, poleg subvencij, s katerimi bi se zagotovila lažja finančno dostopnost do stanovanj.

Z navedenim bi se zmanjšalo število mladih, ki podaljšujejo bivanje pri starših, saj dom staršev ne bi bil več prostor za reševanje finančnih in drugih problemov. S tem bi se posledično ustvarjalo nove družine, kar je zelo pomembno, glede na to, da število starejših strmo narašča. Potrebno je poskrbeti za mlade in mlade odrasle, saj kot pravi rek »Na mladih svet stoji«.

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# **Creating Sustainability on University Campuses: A Literature Review**

Meredith Gillin

Student at Wilfrid Laurier University - Waterloo ON Canada

E-mail: meredith.gillin26@gmail.com

## **Abstract**

The purpose of this paper is to provide an outline of how facility management influences the green initiatives of university campuses and their role in overcoming the challenges faced when achieving sustainability. The method taken was using Internet research and looking at 7 articles that have a perspective from the early 2000s to current day. This assignment looks at the strengths and weaknesses of the articles, the similarities and differences between them and their relevant theories. The conclusion reached is: the best ways to overcome the challenges associated with campus greening include: institutional commitment to campus greening initiatives, finding ways to do the campus greening at lower costs, FM should have clear communication with the central administration and with all important stakeholders, using environmental management systems (EMS), certification according to standards (ie. ISO 14001), lectures, greening the curriculum, student advocates, and government policies that encourage greening.

**Keywords:** Facility management, Green initiatives, University campus



## **1. Introduction**

Green buildings are a growing trend in the construction industry. They are defined as a building that is “more energy and resource efficient, releases less pollution into the air, soil and water, and is healthier for the occupants than standard buildings” (Richardson and Lynes, 2007). The question on everyone’s mind is whether or not green buildings are financially viable. There is a common perception that they are more expensive. Green products occupy a niche position in the general population’s psyche and this creates opportunity for companies to charge a premium for these products. The belief amongst developers that green design is more expensive is pervasive and will take time to overcome. This literature review aims to address the facility manager’s role in overcoming the difficulties educational institutions face when attempting to build for a greener future. Facility managers must “take a long-term perspective of the most sustainable practices and carefully evaluate green alternatives to traditional construction, operating and maintenance methodologies” (Hodges, 2005). The financial risks balanced with the benefits of green buildings are a widely researched topic.

The research question for this assignment is: How does the relevant literature indicate the facility manager’s role in overcoming the difficulties in creating greener university campuses? This question is important to answer because facility managers play an important role in the maintenance and construction of buildings. Their decisions could save or waste tremendous amounts of money. They could also contribute to environmental sustainability through their decisions. It is important to address the difficulties in building green in order to overcome them.

This review will primarily focus on the following articles. The first is “Overcoming barriers to campus greening a survey among higher educational institutions in London, UK” (2001) by Dahle and Neumayer. The second is “Institutional motivations and barriers to the construction of green buildings on campus a case study of the University of Waterloo, Ontario” (2007) by Richardson and Lynes. The third is “Green campuses: the road from little victories to systemic transformation” (2001) by Sharp. The fourth is “How facilities management can add value to organizations as well as society” (2013) by Jensen, Sarasoia, van der Voordt and Coenen. The fifth is “Green FM as a way to create added value” by Sarasoja and Aaltonen. The sixth is “Quest for a Sustainable University: A review” (2015) by Amaral and Martins. The last is “Environmental management at Swedish universities” (2004) by Arvidsson.

## **2. Comparing Methods of Research**

The articles took somewhat different approaches to conducting research regarding sustainability initiatives in schools and the role of facility management in these initiatives. A summary table (Appendix A) can be found which displays the research methods of the articles analyzed. Richardson and Lynes looked at internal documents of the University of Waterloo and conducted 13 semi-structured interviews with key personnel from facilities management, environmental studies, engineering faculty and administration and finance (Richardson and Lynes, 2007). This provides a broad perspective beyond just the facilities management department. As well, Dahle and Neumayer did in-depth semi structured interviews across higher education institutions in London. This article provided more detail about the types of questions that were asked to the informants. This indicates greater control in the research process. They focused the questions to discussing energy management and solid waste management. As an example “Which initiatives, if any, have been carried out to conserve energy and to increase energy efficiency at your campus” (Dahle et al., 2001). The scope of these two studies was different in the sense that Dahle and Neumayer’s study provided information for more than one school – as they were looking at a cluster of schools within the same city. On the other hand, Richardson and Lynes were looking at an individual school, The University of Waterloo (UW). In both articles the concepts and conclusions drawn could be applied to other situations. The specificity of the study conducted on UW enhances the validity of the results in the sense that it allows the researchers to go more in depth in one particular case study.

Sharp’s article takes a different approach in researching the difficulties in building sustainable campuses. It looked at experience implementing environmental programs at campuses in Australia and the USA, as well as investigating initiatives in 30 universities across Europe and the USA. As well, more research was done regarding the role of leadership and organizational behaviour in achieving sustainability goals on campus. It took a more philosophical and psychological approach to understanding the root causes



why implementing environmentally friendly initiatives can be such a challenge. In comparison with the other articles it takes a broader perspective and due to the nature of the number of schools looked at, it does not draw on specific examples in individual campuses.

Jensen, Sarasoja, Voordt and Coenen did a literature review about three different theoretical perspectives– the facility management view, corporate real estate marketing and business-to-business marketing (Sarasoja et al., 2013). This provides more information about how facility management contributes value to the organization, society and the environment.

Sarasoja and Aaltonen looked at a case study with ISS Palvelut Oy Finland. They did empirical research based on benchmarking with the international green building criteria (Sarasoja and Aaltonen, 2012). This method of research provides a case study on how sustainability can be integrated into the business strategy of a FM organization and the resulting benefits.

In the article, “Quest for a Sustainable University: a review” (2015) the chosen method of research was using Internet research of relevant literature. Amaral and Martins divided the research into two parts – sustainability implementation methods and assessment and report tools. This article provides a holistic perspective on the relevant standards, which must be complied with by sustainable buildings. Thus the Internet based research method chosen is very valid for analyzing all the possible standards that must be met in order to achieve certification.

The article “Environmental management at Swedish Universities” by Karin Arvidsson looked at reports that the Swedish universities were required to submit to the government about their environmental sustainability actions.

### **3. Relevant Theories**

The facility manager plays a vital role in maintaining the green status of a university. The median contribution of facilities activities is only 5% of expenses but 65% of environmental impact (Sarasoja and Aaltonen, 2012). Thus, it is important to analyze the challenges faced by facility managers when making university campuses greener. Each article analyzed provides a different perspective towards the challenges involved.

The article “How can facilities management add value to organizations as well as society” takes the perspective that relationship management is essential to creating a successful facilities management department. FM is a network of relationships that create perceived value amongst key stakeholders (Jensen, et al., 2013). This is important for universities attempting to become sustainable because they must balance relationships between researchers, students, facility management staff, administration and professors. The overlapping interests of these groups of stakeholders can help to enhance the green initiatives of universities. There will be challenges to integrating the interests of all of these stakeholder groups. For instance, the students might be more interested in ensuring their campus is green but the administration just wants to meet the bottom line and will choose the option that costs the least amount of money. Compromises must be met in order to achieve sustainable practices. Institutional change must take hold to ensure every party is committed to campus greening.

The article concludes “Sustainability is an area that is essential for FM to create value in the future” (Jensen et al., 2013). The models the article examined indicate the importance of Green FM towards organizational strategy. It can help contribute to increased staff satisfaction, improved corporate image and result in cost savings, particularly with regards to energy consumption (Jensen, et al., 2013).

The article “Green FM as a way to create added value” presents an argument for why facility management is vital to improving environmental management of companies. It establishes this concept of “Green FM” and how this can add value to the core business by examining the outcomes of introducing a greener business orientation at ISS Finland. The article does not really focus on the challenges of implementing this policy, but rather the benefits and necessary steps of implementing such a project. They state that the overall environmental performance of the building improved significantly without any major investments. (Sarasoja and Aaltonen, 2012). This is vital for understanding how a university can be more successful at implementing greener practices at minimal cost. Cost is one of the most cited reasons why universities do not implement such programs. Thus this article provides some evidence that it can be done at a minimal cost. It looked at the following areas where the building could improve its sustainability:

Cleaning, Building (Heating, Cooling, Lighting, Waste, Water), Outdoor FM and People. Please see Appendix B for a summary chart of the activities that they chose to focus efforts on when greening ISS.

“Institutional motivations and barriers to the construction of green buildings on campus: A case study of the University of Waterloo” provides the perspective that sometimes implementing changes to improve the sustainability of the campus operations is not in control of the facilities management department. The article finds blame in the central leadership of the organization rather than the facility management department for unsustainable practices. Facility managers have to answer to the administration of the school. In the case study, the University of Waterloo central administration determines the budget and whether or not the facilities department has incentives to support future energy saving activities. (Richardson and Lynes, 2007). However, the article poses some solutions to help improve facility management’s role within creating a more sustainable campus. They must ensure clear communication with other faculties like – engineering and environment as well as the central administration. The authors find that having a strong leadership that is focused on creating a sustainable university is vital for the rest of the institution to be committed to this initiative as well. At the time the article was written, the university valued timeliness and being within budget more than environmental impacts (Richardson and Lynes, 2007). Thus in order to overcome some of the challenges to building greener, a university must adopt the mindset of sustainability from all perspectives, starting with the administration and core leaders.

In the article “Quest for a Sustainable University: A review” the authors indicate that the universities should lead by example. Nearly half of global CO<sub>2</sub> emissions can be assigned to fossil fuel combustions in urban buildings, such as university buildings (Amaral and Martins, 2015). They are institutions of education and should be one step ahead of the rest of society. The main focus of the article is on Environmental Management Systems (EMS). The authors believe that the operations of a building is the only way to implement sustainable practices and too often operations lack the continuous improvement mindset which will help the organization in becoming more sustainable. EMS is a way for organizations to continually monitor and improve their sustainable actions (Amaral and Martins, 2015). One challenge specific to university settings is that frequently they will rely on compartmentalization and this will result in schools excelling in contributions to a particular sustainable development dimension and they will neglect contributing to other sustainable development dimensions (Amaral and Martins, 2015). They become overly focused on one way that they have greened the campus and ignore other ways they could improve. This is why getting certified according to a standard such as ISO 14001 is important because it will help to ensure holistic sustainability practices and not just in specific areas.

The article “Overcoming barriers to campus greening – A survey among higher educational institutions in London UK” by Marianne Dahle and Eric Neumayer codified the responses they received regarding barriers to greening campuses into 4 categories. The categories are: financial – lack of money to support green projects, awareness – lack of education, cultural – attitude prevailing on campus and urban – space for storing waste and making buildings energy efficient (Dahle and Neumayer, 2001). These issues can be overcome in a variety of ways. The article suggests using lectures about environmental awareness, using visual means like articles, campus newspapers, emails, posters and films, greening the curriculum, using students as advocates and using punishments as rewards (Dahle and Neumayer, 2001). The article understates the significance of a facility manager’s role in campus greening. They should be targeted for information sessions and sent to conferences about the importance of campus greening so they can alter their policies to make them more sustainable.

In the article “Green Campuses: the road from little victories to systemic transformation”, the aim is to inspire the reader to look at their own university and identify similar situations and adapt the solutions provided. The main reasons presented why creating sustainable universities is challenging has to do with the nature of the universities. They are complex – new buildings are constructed all the time resulting in a large workload for staff in charge of building those buildings. There are also a lot of hoops that need to be jumped through before a building is constructed, taking time and resources. This is especially true if the building is being constructed by abiding to certain “green” certifications. Mental models influence the universities’ orientation towards nature – if people believe that the earth’s resources are infinite they are less likely to believe in environmental destruction. The article defines “absurd consensus” as something that a large group conforms to even if it contradicts their individual perceptions (Sharp, 2001). This applies to university administration that do not believe they play a large role in environmental destruction. Finally there are system archetypes, which are stories, told repeatedly in an organization that

makes the organization appear to have supreme rationality (Sharp, 2001). The article takes the perspective that making change on university campuses requires a “change agent” who acts on behalf of the environment and focuses their energy creating a sustainable campus. They must develop a personal mission and sustain it (Sharp, 2001). The facility manager could be the person who acts as a change agent for the organization. They must have a clear vision of how they want to change the campus. They should look for greener alternatives when changes need to be made to the building structure.

“Environmental management in Swedish universities” by Karin Arvidsson provides information about how in Sweden, public authorities are required to submit environmental reports about their policies, structures and actions (Arvidsson, 2004). It looks at the feedback received from the universities about the steps they have taken to become more sustainable. The obstacles they find are: lack of resources (time and money), organizational structure, legislation concerning public purchasing makes it hard to make environmental demands, lack of indicators, short-term economic thinking (Arvidsson, 2004). One interesting thing they discovered is that there is some indication that environmental management systems work better in smaller universities because they find it easier to mobilize around a common goal (Arvidsson, 2004).

#### **4. Strengths and Weaknesses of the Articles**

A summary chart of the strengths and weaknesses could be found in Appendix C. The articles present strong arguments for why sustainability is important to consider in general and at universities specifically.

#### **5. Similarities between the articles**

It is important to consider how the articles are similar in their approach to facility management’s role in overcoming the challenges of implementing greener campuses. One of the key ways that the articles are similar is that there is a large focus on the financial burden of undertaking green projects. The article “Overcoming barriers to campus greening.” by Dahle and Neumayer talks about how the people they surveyed found a financial barrier to being a main reason why green projects are not undertaken. Similarly the article about the University of Waterloo by Richardson and Lynes discusses the same concept. Dahle and Neumayer discuss the concept of a “cultural barrier” that prevents schools from implementing green initiatives. A similar concept is discussed in Richardson and Lynes in terms of the organization preventing greening. The culture prevents people from changing their views. This is also discussed by Sharp in relation to the mental models, absurd consensus and system archetypes that instill the same beliefs in organizational leaders who refuse to accept the negative impact their buildings are having on the environment.

Another way that many of the articles are similar is they discuss the importance of student involvement in campus greening projects. They have the power to influence decision makers in the administration of the organization. The articles encourage facility management to engage the students to care about creating more sustainable practices within their campuses (Sharp, 2001). The students should be included in the process of environmental sustainability (Arvidsson, 2004). Frequently, students are ahead of the administration but still focus on short term issues rather than the long term systemic issues that prevent more action from being taken (Sharp, 2001).

The articles “How facility management adds value to organizations as well as society” and “Green FM as a way to create added value” are similar in the sense that they focus on how facility management harms or enhances global sustainability. They are both focused on the value that comes from facility management. They also have the angle of real estate management. Green FM will enhance the value of the organization’s real estate assets (Sarasoja and Aaltonen, 2012). Additionally, in models for corporate real estate management environmental sustainability is becoming a key parameter (Jensen et al., 2013).

Universities are businesses that sell education. They attempt to enhance their public perception by hiring the best professors who produce the best research. This will attract the best students and lead them to make more money. In order to attract the best students one argument that is made by Richardson and Lynes is that if the university buildings are green and sustainable, this will attract the best applicants and improve

the public perception of the university. Additionally, in Dahle and Neumayer's study on London higher education institutes they argued for a similar method of recruitment. They believe that a green university can educate its students by giving them a model of behaviours that encourage environmental sustainability (Dahle and Neumayer, 2001). This influences the facility management department because if the school is making more money the FM department will be better funded allowing for better resources to be acquired. In the article "Green FM as a way to create added value" the authors discuss how having LEED EB certification enhances the company's image and organizational brand. Thus it should be a goal for universities to achieve this status to attract the best professors, researchers and students.

## **6. Differences between the articles**

One way that the articles differ is in their focus of creating sustainable campuses. The article "Quest for a sustainable university: A review" provides more information about the standards necessary to meet in order to become a green university. They specifically look at Environmental Management Systems (EMS) (ISO 14001 standard and EMAS), *Sustainability Tool for Auditing Curricula in Higher Education – STAUNCH*, LEED for New Constructions (LEED-NC), LEED for Existing Buildings – Operations and Maintenance (LEED-EB), LEED for schools, LEED for Neighborhood Development (LEED-ND) (Amaral and Martins, 2015).

The benefit of looking at these standards is they provide a framework for the universities to meet in order to establish themselves as green. With the structure and necessary requirements set by these organizations, this creates more incentive and puts more pressure on the universities to meet the standards.

The article "Environmental Management at Swedish Universities" by Arvidsson takes an angle of how the government can influence the sustainability and facility management of universities. Public authorities, including universities are required to submit annual environmental impact reports about their policies, structures and actions. This is important for other countries that could use Sweden as an example for future government policies that could create Green FM in their universities.

The smaller initiatives that can be done by universities to improve its environmental impact is the focus of Dahle and Neumayer's study. On the other hand, the University of Waterloo article focused on the big changes a campus can make including such things as green building construction. The article "Green Campuses: The Road from little victories to systemic transformation" is more focused on personal philosophy and personal discovery (Sharp, 2001). However, raising consciousness amongst more than one individual within an organization is more important for creating greener campuses.

## **7. Conclusions and implications**

Overall, the important thing is that Universities continue their mission towards setting an example for the broader society. They must become more environmentally conscious if the rest of the world is to do the same. It is important for facility managers to consider how their decisions and expertise can influence the environment. When overcoming the challenges they can turn to students, staff and the administration by creating stronger communication channels. Furthermore, As the facility management industry becomes more professionalized, it is important for universities to abide by certifications from organizations such as LEED or achieving gold level status with ISO 14001. By doing this, they can sustain the planet and their position within students minds of being leaders in environmental stewardship.

## 1. Appendix

### Appendix A: Summary of Research Methods of Articles Analyzed

Article	Method
<b>How can Facilities management add value to organizations as well as to society 2013</b> Per Anker Jensen, Anna-Liisa Sarasoja, Theo van der Voordt, Christian Coenen	3 year research project on the added value of facilities management (FM) involving institutions in 5 European countries Literature review
<b>--Green FM as a way to create added value 2012</b> Anna-Liisa Sarasoja and Anna Aaltonen	Based on a case study with ISS Palvelut Oy Finland Empirical research based on benchmarking with the international green building criteria Effects of greener services were tested and measured at the client organization's case facility
<b>Institutional motivations and barriers to the construction of green buildings on campus a case study of the University of Waterloo, Ontario</b> Gregory R.A. Richardson, Jennifer K. Lynes	13 semi-structured interviews with key university individuals Internal documents.
<b>Quest for a Sustainable University: a review</b> Luís P. Amaral and Nelson Martins	Internet based research 2 Parts à sustainability implementation methods and assessment and report tools
<b>Overcoming barriers to campus greening – A survey among higher educational institutions in London UK</b> Marianne Dahle, Eric Neumayer	A depth, in person, semi structured interviews across 6 different higher education institutions in London UK
<b>Green campuses: The road from Little victories to systemic transformation</b> Leith Sharp	Environmental programs in universities in Australia and the USA Range of insights, lessons learnt, preferred approaches presented
<b>Environmental management at Swedish universities</b> Karin Arvidsson	Reports Swedish universities are required to submit to the government about their environmental sustainability actions 25 participating universities in the study

**Appendix B: FM Activity, why it is not green and how it could be greener.**

FM activity	Why it is not Green	How it could be Greener
Cleaning	Chemical, water and	Minimize water and
	cleaning product use	chemical use
Building Heating/Cooling/Lighting/Waste/Water	Energy Use	Real time energy, automatic monitoring of the building Water pressure decreasing valve Free-cooling exchanger
Outdoor FM	Runoffs and erosion	Designing green areas Don't use chemicals on the lawn Use manual work instead of fossil fuel machinery Correct recycling of waste
People	Leave lights on, recycle wrongly	Training on recycling Reminders to turn off lights “Environmental days”

## Appendix C: Strengths Weaknesses of the literature reviewed

Article	Strengths	Weaknesses
<b>How can Facilities management add value to organizations as well as to society 2013</b> Per Anker Jensen, Anna- Liisa Sarasoja, Theo van der Voordt, Christian Coenen	Provides a good over view of the 3 different perspectives – B2B, FM and CREM	Models are difficult to understand without more detailed explanation  The analysis of the models is focused on CREM and FM perspectives – More models with B2B should be included
<b>--Green FM as a way to create added value 2012</b> Anna-Liisa Sarasoja and Anna Aaltonen	Presents the concept of green FM which the article states is under appreciated as being important for sustainability – FM managers are in a unique position to influence the life cycle of a building  Recognizes the importance of people in the process of FM – Green FM is not only about the building it is also about the people in the building	Could do a better job at looking at how employees are influenced by the Green FM  Could integrate some of the downsides of implementing this sustainability initiative
<b>Institutional motivations and barriers to the construction of green</b>	Easy to understand à good clarity in the exhibits used in the paper	No empirical research done – it is all qualitative based

<b>buildings on campus a case study of the University of Waterloo, Ontario</b> 2007 Gregory R.A. Richardson, Jennifer K. Lynes		Critical of the UW's sustainability initiatives – ignoring the contributions of students  More detail about specific initiatives that could be done
<b>Quest for a Sustainable University: a review</b> 2015 Luís P. Amaral and Nelson Martins	Good use of standards and explanations of EMS  A summary of what is necessary for a sustainable university  Emphasizes the importance of sustainability assessment and reporting	None of their own research was done – entirely based on other people's research
<b>Overcoming barriers to campus greening – A survey among higher educational institutions in London UK</b> 2001 Marianne Dahle, Eric Neumayer	Detail given about the interviews – specific questions  Theoretical background explains the significance of environmental sustainability	Out of date – talks about how universities are just starting to become more sustainable  Criticizes the people they chose to interview stating their knowledge is based on personal viewpoints and subjective
<b>Green campuses: The road from Little victories to systemic transformation</b> 2001 Leith Sharp	Explains the underlying psychology of why people ignore climate change	Too much detail regarding the nature of universities  Very philosophical for the context of facility management
<b>Environmental management at Swedish universities</b> 2004 Karin Arvidsson	Good overview of how Sweden plans to improve the sustainability at universities  Could be applied to other governments à the article states that one of the main driving forces for environmental sustainability initiatives was the government commission	Does not describe techniques of overcoming the obstacles presented  If they wish to change they need to find strategies to overcome these obstacles  Does not emphasize the importance of facility management in environmental sustainability



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# **Housing quality of elderly – the challenge for the future**

Primož Zupančič

Student at Nova University, European faculty of Law, Slovenia

e-mail: prizupancic@gmail.com

Bojan Grum

Institut of Real Estate Studies, Slovenia

## **Abstract**

Developed world is experiencing trend of ageing. The mentioned fact requires urgent changes in economic, social and health policies, along with building and spacial adaptements for elderly, if I mention the most important policies, linked with the trend of population ageing. One of priorities for the future should become increase measures, as regards housing conditions for elderly, together with sustainable public policies. The article focuses on the challenge, linked with improved housing conditions for elderly by enabling adaptations and relevant changes of the most important parameters of culture of living as well as improvements of housing conditions. The article suggests possible solutions, which can serve as a framework of practical implementation of new policies and changed (improved) existing ones, related to trend of population ageing.

**Keywords:** Older population, Elderly, Demographic changes, Housing conditions, Adaptations, Well-being

## **1. INTRODUCTION**

Ageing of population became one of the most visible challenges of the developed world. Its impacts and consequences will soon be noticed in many fields of every day's life. However, beside many policies, which should be taken into account when considering ageing of population, housing adequacy for older people is one of the most neglected challenges in Slovenia.

Life cycle requires gradual adaptations as becoming older means also physical decline or progressive illnesses. Adequate housing conditions for older people therefore demand housing environment, which is adaptable and enable independent living in individual housing units. In line with the mentioned, also the European guidelines direct towards de-institutionalisation process, meaning less institutional care and more individual housing support. Slovenia as one of Member States should take into account the mentioned recommendation. Policies are namely fragmented and still do not enable possible multiplication of positive impacts for older people.

In general, many Member States are very proactive in finding solutions, how to facilitate life of older people and to increase their well-being. One of the most important policies for older people include adapted and upgrading housing policy in line with fast ageing of population. Slovenia is lagging behind the mentioned initiatives, neglecting the needs of older people and adequate solutions for better life in older age. The article introduces the situation in Slovenia, directs to possible solutions and offers further reflection on sustainable solutions, which might be implemented in Slovenia. Due to a broad challenge of housing challenge for older people, the focus will be given to just one segment, to the identification of the situation and to assessment of maintenance needs and support, expected from the public policy and individuals.

## **2. DELAYED ANSWERS TO ACTUAL HOUSING NEEDS REQUIREMENTS IN SLOVENIA**

Slovenia is recognised as one of the Member States with a high share of own housing. Owning a house or an apartment includes maintenance and adaptations costs, which might rise when ageing. The so-called "Jazbinšek" Law<sup>42</sup>, which enabled relatively cheap purchases of owned housing units in 90s, extremely increased the privately-owned property share in Slovenia. The Table 1 clearly shows the high share of housing ownership in Slovenia in nearly all age groups. Not only this fact makes the housing policy for elderly more difficult; ownership does not differ significantly across quantiles (less well-off individuals purchased cheaply via "Jazbinšek" law, without thinking about delayed maintenance costs on their own). The consequence are substantial ownership costs, also for poorer older people or/and of those with small pensions and even higher (health, housing) requirements. The proportion of housing ownership in Slovenia is well described from the Table 1.

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<sup>42</sup> Stanovanjski zakon, Ur.l. RS št. 18/91 from 11.10.1991 (The Official Gazette of the Republic of Slovenia)

*Table 1: Percentage of housing owners in selected countries (with or without mortgage), by age, area, income and occupational status*

	Age						Area		Quantiles of household income				Occupational status					
	Total	18-24 years	25-34 years	35-44 years	50-64 years	65+ years	Rural	Urban	Lowest quartile	Second quartile	Third quartile	Highest quartile	Professionals, managerial	Other non-manual professionals	Self-employed	Skilled workers	Unskilled workers	Farmers
Austria	51	30	44	56	54	57	70	29	48	51	46	54	51	52	59	55	40	80
Belgium	70	51	61	69	75	81	70	70	56	71	74	75	90	73	68	65	51	100
Denmark	63	41	51	67	77	60	76	55	50	52	66	82	70	61	80	68	50	89
Finland	67	30	51	72	77	83	77	57	53	65	71	74	77	64	75	68	57	90
France	48	24	31	44	63	68	62	37	39	47	46	59	51	45	64	39	29	82
Germany	45	27	27	47	60	47	64	28	33	38	49	53	54	40	57	39	40	93
Greece	68	30	55	69	81	86	85	58	70	63	61	66	77	57	77	70	56	89
Ireland	73	53	57	80	84	88	79	65	50	70	76	78	76	72	88	68	61	96
Italy	76	80	66	77	83	75	82	71	64	73	84	79	83	75	74	80	77	71
Luxembourg	77	75	65	74	81	90	80	72	69	74	81	78	83	82	63	57	77	79
Netherlands	48	29	42	61	61	33	58	41	36	38	53	64	66	49	63	38	20	62
Portugal	59	55	59	58	64	56	65	45	49	46	55	75	76	61	76	53	46	80
Spain	76	67	68	75	82	87	84	74	59	81	78	79	83	71	84	81	57	85
Sweden	60	32	43	66	73	65	72	56	51	60	62	71	70	55	76	59	43	83
UK	59	36	50	67	66	66	65	56	27	53	71	88	87	65	86	59	34	32
Cyprus	79	81	73	82	80	78	81	78	71	82	82	86	87	76	76	74	75	79
Czech Republic	45	31	34	51	50	51	60	32	37	44	50	49	57	43	52	42	41	67
Estonia	82	66	73	82	89	90	89	78	79	87	82	80	87	78	78	84	76	100
Hungary	90	81	82	92	96	96	95	86	87	94	93	90	94	93	95	89	89	69
Latvia	50	49	43	51	53	49	47	51	35	51	56	50	57	49	54	48	41	39
Lithuania	89	72	78	91	97	98	90	88	90	90	91	85	92	88	89	91	82	100
Malta	78	74	75	79	83	72	83	76	73	80	78	77	86	78	88	64	66	81
Poland	70	54	73	70	74	77	86	55	62	65	69	75	86	69	82	62	66	97
Slovakia	82	72	78	82	89	90	86	78	73	84	85	82	86	82	82	82	85	100
Slovenia	86	85	72	86	95	91	89	81	90	80	89	85	89	85	87	87	76	100
Bulgaria	86	69	78	84	96	92	85	87	82	88	90	84	85	88	96	88	85	100
Romania	84	62	71	88	97	97	86	83	83	82	89	83	86	82	86	89	85	83
Turkey	57	54	49	52	73	80	74	52	63	52	58	59	49	57	59	61	45	83
EU15	60	44	48	61	70	67	70	53	45	55	62	68	69	56	71	57	47	82
NMS	72	58	69	73	77	78	83	61	66	70	75	75	81	70	79	66	72	95
ACC3	67	57	56	66	83	89	81	60	71	62	70	67	68	70	67	76	64	83

Source: Q18 – Which of the following best describes your accommodation?

1. Own without a mortgage (i.e. without any loans); 2. Own with a mortgage; 3. Tenant, paying rent to private landlord; 4. Tenant, paying rent in social/voluntary/ municipal housing; 5. Accommodation is provided rent free; 6. Other; 7. Don't know.

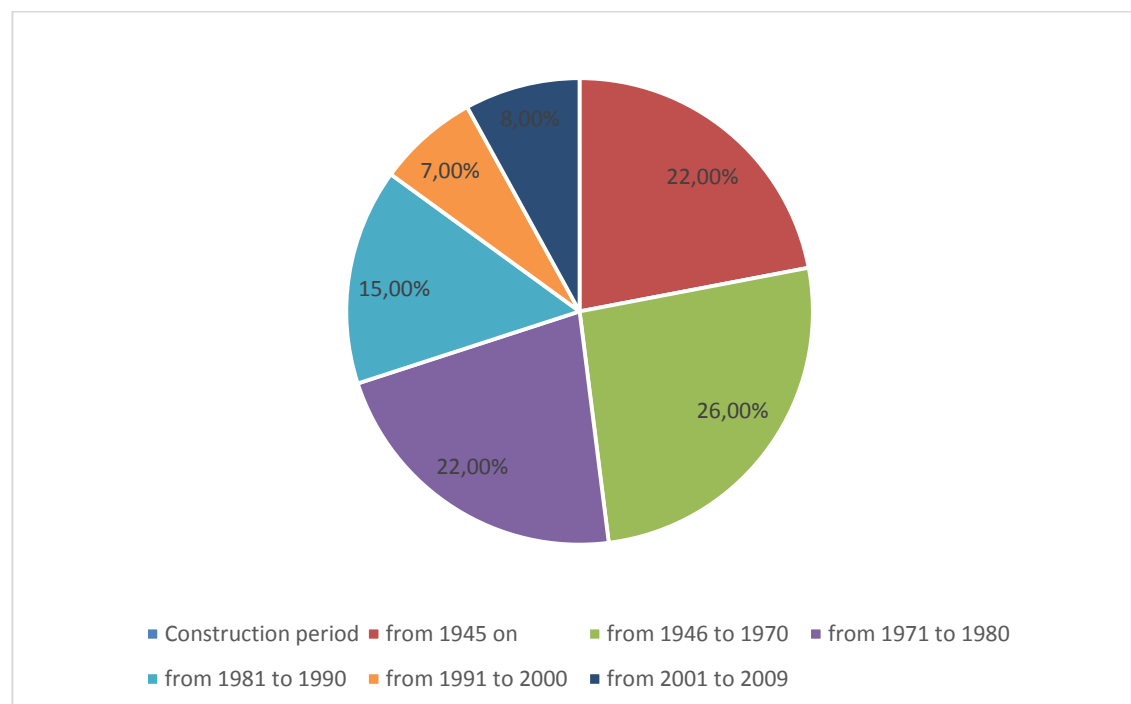
Note: In some countries, the category of 'farmers' was underrepresented in a statistical sense (too few cases), so statistics obtained for this group need to be analysed with caution.

Source: Eurofound (2006), Table 15, page 56

Lack of regular maintenance of financially weak housing owners in decades after purchases resulted in aged housing units along, in some cases, old age poverty. Own housing became in time too expensive, not maintained, lacking modern infrastructure and necessary funds for modernisations. There does not exist any reliable assessment in Slovenia as regards the housing adequacy requirements due to visible and fast demographic trends. Beside already noticed inadequate housing conditions and maintenance, also due to ageing phenomenon, not adequate modern facilities for older people is available (sheltered housing). Briefly said, from one side Slovenia is facing high housing ownership of older people (the highest share), but it is inadequate or cannot be maintained properly. Even to financially sustainable older people not enough services and support is offered to keep living in own housing as long as they can. Both categories of older people have something in

common. Both prefer to live in own housing, in known environment, independently, but supported, if and when needed. How to achieve better housing conditions for older people in Slovenia, what has to be improved?

*Chart 1: Period of construction of housing in Slovenia since 1945*



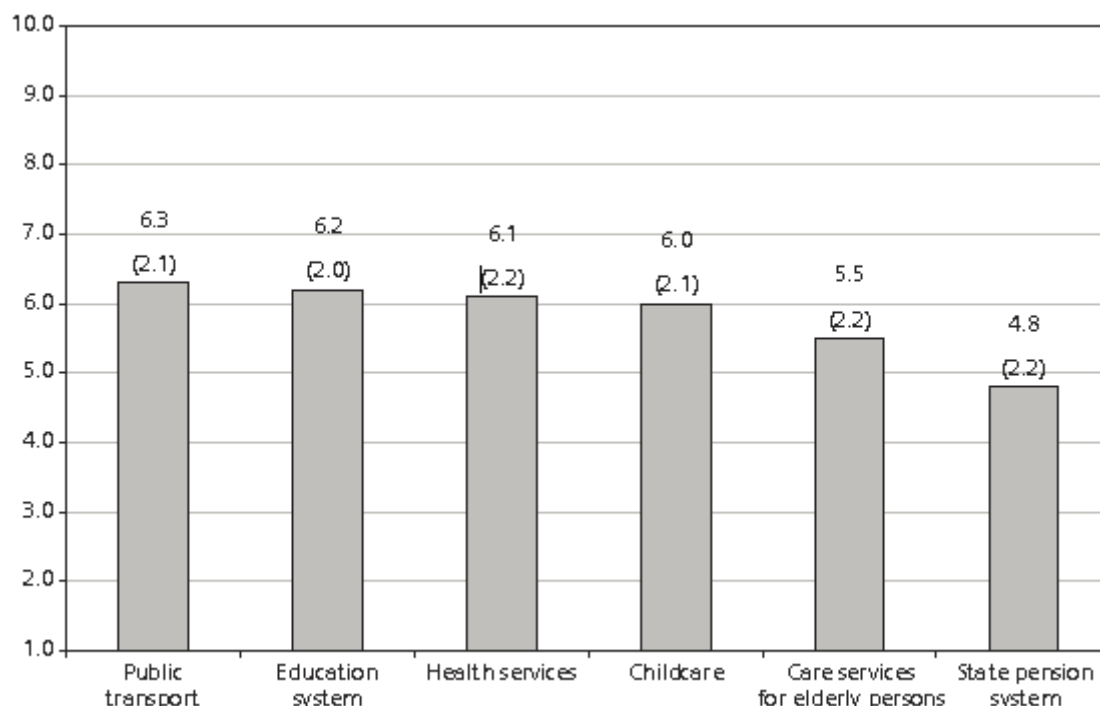
Source: SURS. SURS 2010 ([http://kazalci.arso.gov.si/?data=indicator&ind\\_id=349](http://kazalci.arso.gov.si/?data=indicator&ind_id=349))

As seen from the chart above, the majority of housing in Slovenia has been constructed before 1990, which indicates prevailing ageing of housing and needed maintenance, which should be adapted to ageing population, who belong to the highest ranked housing ownership category. Just 15 % of all the housing in Slovenia were built after 1991 (SURS 2010, on line data).

Beside pure housing issues tackling older people, there are external factors, influencing the quality of life when ageing. One of them are care services for elderly. According to the Public Services Index<sup>43</sup>, results are interesting, not showing any differences among new and old Member States. Namely, for the purpose of the reasearch, as care services for elderly persons is considered, they are (according to the Index) neglected and do need furter reflection on improvements (see Table 2). Not to mention that there are quite a lot of differences between urban and rural population needs, but this problem is too wide to be included into this paper. As seen from the Health 2020 (WHO, 2016), to reduce health inequalities through the life-course, guarantee of the availability of housing, suitable for older people and those with disabilities and at home support modification to enable independant ageing and living has to be assured.

*Table 2: Average European evaluation of public services, by type of service in 2007*

<sup>43</sup> Index exists of a 10-point scale, with 1 denoting the lowest rating and 10 the highest, the average score for four services – namely, public transport, the education system, health services and childcare services.



Notes: Figures show average value on a 10-point scale; figures in parentheses show standard deviation. Results are based on responses to Question 56: 'In general, how would you rate the quality of each of the following public services in your country on a scale from one (very poor quality) to 10 (very high quality)?'

The results are weighted by population.

Source: EQLS 2007

Source: Eurostat (2010), Figure 1, page 12

### 3. TIME FOR ACTION - HOUSING CHANGES FOR ELDERLY IN SLOVENIA NEEDED

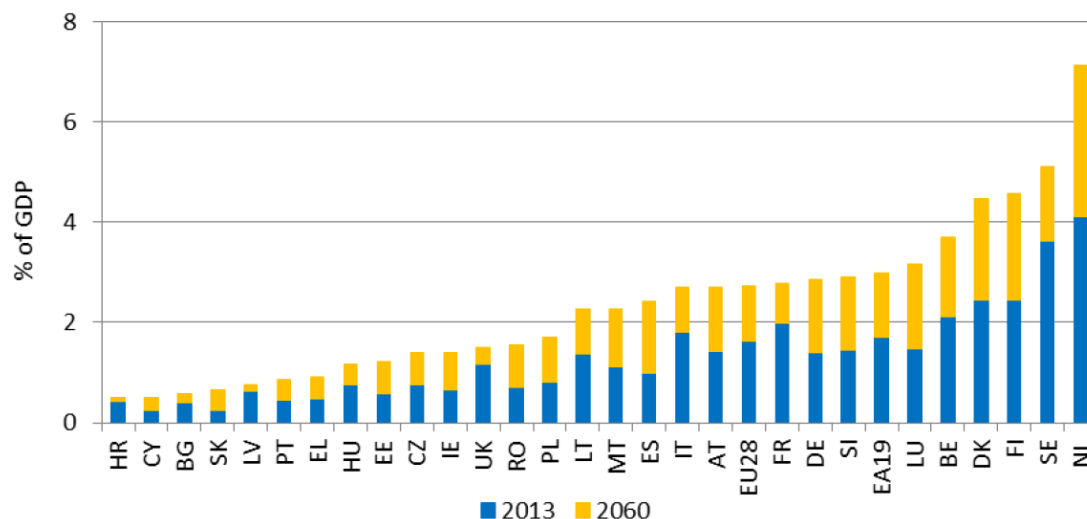
Ageing report 2015 foresees for Slovenia that the share of older people between 65-70 will increase from 12,7% in 2013 to 17% in 2060. The share of older people above 80 years will increase from 4,6% in 2013 to 12,4% in 2060. From the mentioned fact more comprehensive research of housing adequacy in Slovenia is more than needed.

Another research (Bogataj, D., Szander, N., Ros McDonnell, D, 2015) emphasises, that there is 45 billions EUR of private housing units in Slovenia, owned by older people, at the further assesment that until 2050 nearly one third of population in Slovenia will be older than 65 years. Further on, the interesting SHARE survey (Borsch-Supan, A. 2016) confirms that Slovenia ranks very low as regards the existing barriers in life enviroment (in narrow and broader sense), which block accessibility and lower the quality of living for older people. The mentioned fact impacts the lower ability to live independently in own housing. Existing barriers have to be changed if Slovenia wants to become inclusive and socially responsible society. Slovenia has adopted several documents in the past, which refer to the situation of older people. During the European Year of Active Ageing and Intergenerational Solidarity in 2012 an emphasis was given to improve the situation of older people, including their right to live independently as long as they wish and they can. The follow-up introduced the so called "Active Ageing Index" with EU countries ranking as regards three main domains, one of them independent living. One of the most important paradigms in ageing policies became already mentioned shift from institutional care towards home care and independent living. The mentioned change can be considered positive from different points of views.

Living at home, even supported, enables more institutional care for those in need and decreases costs for unnecessary investments into institutional care for older people. Additional costs not needed, if people do not enter institutional care only due to "preventative" reasons. Especially the "preventative" reasons can be eliminated by adaptations in own housing units. Adaptations for older

people, assure that staying in own housing can be much cheaper than institutional care, when not needed (as illness, own wish...). However, Slovenia belongs to Members States which devotes just a small share of GDP to the long-term care (see Table 3). The long-expected Law on Long Term Care (in preparation) namely foresees higher funds dedicated for home care and assistance in line with de-institutionalisation paradigm.

*Table 3: Public expenditure on long-term care in the EU, % GDP 2013 and forecast for 2060*



Source: Long-term care – European Pillar of Social Rights

[https://ec.europa.eu/commission/sites/beta-political/files/long-term-care\\_en.pdf](https://ec.europa.eu/commission/sites/beta-political/files/long-term-care_en.pdf) (24.07.2017)

To make a smooth shift towards home based services instead of further investments into institutional care (along more investments for ageing issues as recommended by the Annual recommendations from the European Commission), situation of elderly in the long term in Slovenia might improve a lot. Housing inadequacy is among the most worrisome issues, taking into account the high proposition of housing ownership and needed maintenance in line with accelerated ageing demands. Researches clear show that health of older people is considerably better, when they remain in known environment, at home. Therefore, investments into improved living conditions for older people diminish possible health costs and make public finances more sustainable.

Last, but not the least, Slovenia is eligible for European funding, which are to certain extent also endorsed and oriented towards improved conditions for older people (within the New Financial Perspective).

Slovenia does not have any comprehensive governmental framework, how to proceed with ageing challenge in a sense of housing adequacy for older people. There are some welcomed and well-established incentives, mostly in urban areas (as Older to Older Initiative<sup>44</sup>), some even on the voluntary basis, but it is evidently not enough to cope the ageing trend timely and systematically. Slovenia is right now working on a legislative improvements, but all the foreseen documents are more less recommended material, without a serious binding obligations. The latest relevant draft is still in the consultation phase, but it lacks the described topics in details. Not adequate intersectoral cooperation, not foreseen vision for an ageing society, not comprehensive older people friendly housing action plan (practical implementation!) is available in Slovenia. The article therefore reminds of some important, but neglected elements, which might contribute to concrete steps towards sustainable housing welfare for older people in Slovenia.

According to the publication »Inadequate housing in Europe: Costs and consequence« there are some elements causing negative impacts that include ill-health or accidents, resulting in substantial healthcare costs. However, costs have not been assessed for the EU as a whole and also not

<sup>44</sup> The mentioned initiative under umbrella of Association of elderly recieved also the EU reward in 2017. The main goal is voluntary preventative work, visiting older people over 65 at home and assesment of needs and situation at home, when living at home and independently. The visits are performed by older volunteers.

integrated into the planning of Member States' housing policies either. Further on, the same publication states that if all necessary improvements were completed at once, the cost to EU economies and societies would be repaid within 18 months by projected savings such as lower healthcare costs and better social outcomes. In other words, for every €3 invested, €2 would pay back in one year. Finally, the publication stresses that initiatives might be spread out over longer periods of time and renovations might lead to savings (such as lower energy bills). Therefore, engaged residents may be willing to contribute to them financially (Eurofound, 2016). Slovenia should reconsider the mentioned costs and advantages of further actions.

#### 4. FINDINGS: CONCRETE PATHWAYS TOWARDS HOUSING WELLBEING OF ELDERLY

Concrete pathways towards well-being of older people requires efforts to determine, what are the real needs and deficiencies. It requires identifying all the relevant constraints, barriers and realistic approach what can be done in short, medium and long term. It is important to decide, which are legislative changes to be adopted and what might be considered as soft measures, implemented without delay. By improving housing policy, sustainability of public finances would be improved in the long term, the trade-off between investments into better housing conditions for older people and other costs, if not implemented changes, is, according to my point of view, not the question.

An interesting insight into costs associated with housing can be seen from the already mentioned Eurofound publication. Among residents' and external costs, we can find some relevant costs, which can be associated with ageing inadequacy barriers (see Table 4).

*Table 4: Costs associated with inadequate housing*

Residents' costs	External costs
Annual loss of asset value if owned (H)	Annual loss of asset value if rented (H)
Poor physical health (H)	Higher health service treatment cost (H)
Poor mental health (M)	Higher mental health service treatment cost (H)
Social isolation (NQ)	Higher care service treatment cost (M)
Higher home fuel bills (H)	Higher building heating costs (H)
Higher insurance premiums (H)	Higher external insurance premiums (NQ)
Uninsured content losses (M)	Uninsured external losses (M)
Under-achievement at school (NQ)	Extra school costs/homework classes (H)
Loss of future earnings (M)	Loss of talents to society (NQ)
Personal insecurity (NQ)	High policing cost (H)
More accidents (M)	High emergency service costs (H)
Poor hygienic conditions (NQ)	High environmental health costs (H)
Costs of moving (M)	Disruption to service providers (M)
Adopting self-harming habits (M)	Special healthcare responses (H)
Cost of repair, maintenance and improvement (H)	Government and EU programmes (H)

Note: The table indicates whether the cost can be quantified (H). It also identifies costs that could be quantified given better data (M), and costs that exist but are probably non-quantifiable (NQ).

Source: Ambrose et al (1996).

Source: Eurofound (2016), Table 4, page 29

According to the table above, there are significant number of costs, related to housing adequacy for older people, which might be avoided if reacted timely and in a holistic manner. These include poor physical and mental health costs, social isolation, more accidents, costs of moving (e.g. due to lift absence), costs of repair etc. as well as external costs. Both categories might be evaluated in quantified way and therefore neutrally presented the progress in chosen country assessed. According to my research, a comprehensive and similar approach to evaluation of present and future needs of ageing population in Slovenia might contribute to better evaluation of older people needs, to adequate and timely actions, policies and necessary changes. Recently, the draft document



“Longevity society” was submitted by the Slovene government for public consultation. The document describes working framework and guidelines for all needed changes in the domain of population over 65 years in Slovenia. The special emphasis is given to adaptability of working and living environment through the life-cycle and efficient use of existing ICT technologies. The document confirms the fact that Slovenia lacks adaptabilities for older people. At the same time the document confirms that Slovenia is not developing any solutions, dedicated to social security along independent housing options, including long-term care in own housing units. By mentioned social security the document refers to the mechanism of inverse mortgage, in the field of adaptability one includes tools for prolonged independent life as remote ICT technology, sheltered housing, daily centres etc. One of the most interesting initiatives includes establishment of the governmental Fund for renovation and adaptability requirements. After adoption of the document relevant ministries are supposed to prepare action plans according to guidelines and chosen solutions (UMAR, 2017). However, no concrete action towards sustainable housing solution is visible yet. By implementing further concrete actions in this direction, major burden of housing, linked to high ownership would be facilitated for older people as well for the society as such. Implementation and legislation should consider all the relevant factors, influencing well-fare of older population, in this context housing conditions. As already mentioned, Slovenia is facing fast ageing trends, housing adequacy is therefore one of important challenges which cannot be ignored. By the mentioned article, it is important to stress:

- The ageing in Slovenia is a fact, the housing challenges along necessary adaptation are ignored or just partially tackled, therefore time is an important factor for timely solutions;
- There is a need for research and neutral assessment all the factors, influencing the quality life of older population with an emphasis on adequacy targets of housing conditions and adaptable environment in Slovenia;
- At the same time one should evaluate existing (also legislative) barriers as regards quality housing conditions and independent life of older people at home, evaluate steps for eliminating barriers and confirm responsibilities of relevant stakeholders in Slovenia;
- Policy makers should propose adequate solutions, based on quality experts research and established national and European guidelines and recommendations<sup>45</sup>. Paradigm of de-institutionalisation became the prevailing one in ageing policies.
- There is a need to submit quality and innovative housing solutions to enable quality life of older people as e.g. engineering services, technical and ICT adaptabilities, exchanges of housing units etc.;
- As the most important, it is necessary to support the establishment of the neutral high quality institution, which would be responsible for informing on diverse housing solutions for older people, for accessibility of information in older friendly environment as well as for transparency of information offered.

To conclude, the services and solutions mentioned should be universal, available to all elderly in need in Slovenia. The important housing specifics in Slovenia includes the extremely high housing ownership of people older than 65 years (91%!), including also category of financially weaker older individuals, incapable to cover costs, related with ageing requirements. Both financially diverse categories have a right to well-being in old age, to both should be offered support in housing adequacy, when needed. As foreseen in Long-term Act proposal, universality of services for older people (also housing adequacy needs) should be assuring by a new obligatory social security contribution, paid in certain percentage by each salary or each pension in Slovenia. In such a way, adequate funds could be collected, also for the need of socially excluded or disabled person, when aged. Together with holistic approach, set by drafted “Longevity Society” improvements in Slovenia should gain results. Documents should be seen as complementary ones and not overlapping or remaining on the theoretical basis. The mentioned solutions, based on ageing trends and high housing ownership share in Slovenia, costs of ageing could be diminished, the quality of older people would increase and looking comprehensively. Also society cost would be more sustainable in a long term, even when revised in line with future needs of ageing.

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<sup>45</sup> According to annual Council Recommendations, EU submitted Country-Specific Recommendation on Long-Term Care for a long time for Slovenia, stressing no substantial progress in implementation in time.

## 5. CONCLUSIONS

Slovenia as a Member State should be devoted to common EU goals. In 2008 Slovenia held the EU Presidency, one of its major achievements was also the launch of the European Day of Elderly and Intergenerational Solidarity (last day of each October). Along the already mentioned European Year of Active Ageing and International Solidarity in 2012, the Guiding Principles of Active Ageing have been adopted by the Council, together with the Active Ageing Index. Evaluation of progress from 2000 to 2014 shows a decline in ranking in Slovenia. Slovenia should be more ambitious to reach a better position.

Slovenia is ageing; therefore, it is of utmost importance to provide all the necessary steps to facilitate the increase in the share of older people and to preserve their independence and well-being as long as possible. Europe is considering ageing of population as one of the most important challenges for the future, including more binding requirements to realise the improvements. It is socially responsible to give more attention to improved housing situation for elderly in Slovenia. By development of a sustainable model for adequate housing in Slovenia, positive multiplication effects for the whole society can be achieved. There is a need to act fast, to develop the innovative model for practical housing implementation solutions for older people. Costs for non-implementation will be much higher than finding timely and adequate solutions. There is no excuse to hide behind the challenge, specific programmes and actions can be facilitated also by European Funds. Let's contribute to the better future, also by launching new initiatives, by adopting relevant legislation and by awareness raising on this important, but neglected challenge of ageing.

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# **Longterm lease as an alternative approach to current mechanisms for acquiring land needed for public roads**

Irena Karčnik

Aljoša Dežman

Bojan Grum

Nova University, European faculty of Law, Slovenia

E-mail: irena.karcnik@gmail.com

## **Abstract**

The primary objective of this research is investigation into a long-term lease as an alternative to current approaches for acquisition of land needed for public roads, i.e. is lease more acceptable to both landowners and local municipality management. The research topic is addressing the discrepancies between the legal definition of public road and their actual status. The analysis of discrepancies will be performed in a few selected municipalities so that the results can be extrapolated statewide. Legal regulations regarding public roads will be analyzed as they can be one of the reasons for the above mentioned discrepancies. Slovenian and a few other countries' case law will be compared as well. As stated before, the main research objective is to evaluate the differences between theoretical, e.g. legal code assessment, and practical, e.g. incoherent regulations or failure to comply with regulations, point of view and their consequences. A key missing piece in our current knowledge understands of the direct and indirect consequences of de facto status on landowners and local municipality management. The logical next step is developing suitable recommendations to resolve the current situation in both practical and theoretical levels in order to create necessary conditions for the public road to serve their primary focus being safe and obstacle free traffic. The final part of research assesses whether or not the lease is a suitable alternative to currently most often exercised approaches in Slovenian public roads.

**Keywords:** Public Roads, Land Acquisition, Longterm Land Lease, Economic Balance

## 1. UVOD

Javne ceste ter stvarne pravice na njih v Sloveniji ureja Zakon o cestah (v nadaljevanju ZCes-1), ki je v letu 2011 nadomestil prej veljavni Zakon o javnih cestah (v nadaljevanju ZJC). ZCes-1 v prvem odstavku drugega člena, med ostalimi pojmi določa, da je javna cesta cesta, ki jo država ali občina, v skladu z merili za kategorizacijo javnih cest, razglasi za javno cesto določene kategorije in jo lahko vsak prosto uporablja na način in pod pogoji, določenimi z zakonom in drugimi predpisi (ZCes-1, 24. točka prvi odstavek 2. člen). »Akt o kategorizaciji ima torej konstitutivni učinek« (M. Krisper-Kramberger, 2011, str.1411).

Javne ceste so kategorizirane kot državne ali občinske ceste. Državne ceste so v lasti Republike Slovenije, občinske ceste v lasti občin. Javne ceste so prometne površine, ki so splošnega pomena za promet in jih lahko vsak prosto uporablja na način in pod pogoji, določenimi s predpisi, ki urejajo ceste, in pravili cestnega prometa (ZCes-1, prvi odstavek 3. člena). Cesta je površina, omejena z mejo cestnega sveta (ZCes-1, peta točka prvega odstavka 2. člena), pri čemer je cestni svet zemljišče, katerega mejo na podlagi predpisov o projektiranju javnih cest določajo linije med skrajnimi točkami prečnega in vzdolžnega profila cestnega telesa, vključno z napravami za odvodnjavanje (ZCes-1, 12. točka prvega odstavka 2. člena). Cestno telo je del javne ceste, ki ga sestavljajo cestišče z nasipi in vkopi (ZCes-1, 13. točka prvega odstavka 2. člena).

Glede na pomen javnih cest in javnega prometnega omrežja, tako na nacionalnem kot mednarodnem pomenu, merila za kategorizacijo vseh javnih cest določi vlada (ZCes-1, 39. člen), prav tako so že z zakonom zelo natančno določeni način in pogoji gradnje, režim upravljanja in vzdrževanja, kot uporaba javnih cest. ZCes-1 v četrtem členu določa, da se javne ceste lahko uporabljajo le za cestni promet, za druge namene pa samo v primerih ter na način in pod pogoji, določenimi s predpisi, ki urejajo javne ceste. Način uporabe javne ceste, s katerim se zasede cestišče z namenom oviranja ali preprečevanja prometa na njej, je izrecno prepovedano. Prepovedi se še bolj natančno navedene v petem členu istega zakona, ki prepoveduje izvajanje ali opuščanje kakršnih koli del na javni cesti, na zemljiščih ali na objektih ob javni cesti, ki bi lahko škodovala cesti ali ogrožala, ovirala ali zmanjšala varnost prometa na njej.

Na drugi strani pa so natančno opredeljene tudi obveze in dolžnosti lastnika oziroma upravljavca javnih cest. Upravljavec državnih cest in državnih kolesarskih povezav je direkcija, če za določene ceste zakon ne določa drugače (ZCes-1, 54. člen). Upravljavec občinskih cest je občinska uprava (ZCes-1, 95. člen). Zakon natančno določa pogoje gradnje in investiranja ter nivo vzdrževanja javnih cest (ZCes-1, 15. in 16. člen). Redno vzdrževanje javnih cest je obvezna gospodarska javna služba, ki obsega vzdrževalna dela za ohranjanje javnih cest v stanju, ki zagotavlja varnost in prevoznost javnih cest, nadzor nad stanjem javnih cest in cestnega sveta ter vzpostavitev prevoznosti cest ob naravnih in drugih nesrečah (ZCes-1, prvi odstavek 16. člena). Minister, pristojen za promet, predpiše vrsto in način izvedbe rednih vzdrževalnih del na javnih cestah ter nivo rednega vzdrževanja javnih cest. (ZCes-1, drugi odstavek 16. člena). Način izvajanja gospodarske javne službe rednega vzdrževanja državnih cest določi vlada, občinskih cest pa občina (ZCes-1, tretji odstavek 16. člena). Zakon predpisuje celo minimalni nivo rednega vzdrževanja javnih cest v primeru stavk (ZCes-1, 17. člen), kar jasno kaže, kakšen pomen javne ceste imajo. Celotni lastnike nekategoriziranih cest, ki se sicer ne uvrščajo med javne ceste, služijo pa prav tako splošni uporabi v kolikor so dane v javno uporabo, zakon obvezuje k minimalnim standardom in nivoju vzdrževanja (ZCes-1, 6. člen). Nekategorizirana cesta, ki se uporablja za javni cestni promet, je po določbah zakona vsaka prometna površina, na kateri se opravlja promet na način in pod pogoji, kot jih v skladu s tem zakonom in predpisom, ki ureja pravila cestnega prometa, določi lastnik ali od njega pooblaščen upravljavec (ZCes-1, 38. točka prvega odstavka 2. člena).

Da pa bi lastnik oziroma upravljavec navedene pogoje lahko izpolnjevala in bi javne ceste resnično lahko služile splošni uporabi vseh, mora biti lastniku oziroma upravljavcu javnih cest dana izključna pravica razpolaganja z nepremičninami na katerih javne ceste so. Zato zakon predpisuje, da imajo javne ceste status javnega dobra in so izven pravnega prometa (ZCes-1, drugi odstavek 3. člena). Na njih tudi ni mogoče pridobiti lastninske pravice s priposestvom ali drugih stvarnih pravic

(ZCes-1, drugi odstavek 3. člena). Lastninska pravica je v Stvarnopravnem zakoniku (v nadaljevanju SPZ) opredeljena kot pravica imeti stvar v posesti, jo uporabljati in uživati na najobsežnejši način ter z njo razpolagati (SPZ, prvi odstavek 37. člena). Priposestevanje nepremičnine pomeni, da dobroverni lastniški posestnik pridobi lastninsko pravico na nepremičnini po poteku desetih let (SPZ, drugi odstavek 43. člena). Med stvarne pravice Stvarnopravni zakonik v drugem členu našteva lastninsko pravico, zastavno pravico, zemljiški dolg, služnost, pravico stvarnega bremena in stavbno pravico (SPZ, 2. člen). Ne glede na navedeno, pa je na zemljiščih javnih cest, ob zakonsko določenih pogojih in omejitve, mogoče pridobiti tudi stvarno služnost (ZCes-1, tretji odstavek 3. člena), pri čemer je to pravica lastnika nepremičnine izvrševati za njene potrebe določena dejanja na tuji nepremičnini ali zahtevati od lastnika služne stvari, da opušča določena dejanja, ki bi jih sicer imel pravico izvrševati na svoji nepremičnini (SPZ, prvi odstavek 213. člena), vendar pa kot je iz tretjega člena ZCes-1 razvidno, zgolj iz razlogov, ki služijo javnemu interesu, povezanemu z osnovnim namenom javnega cestnega omrežja ali drugih povezanih gospodarskih služb.

Kljub tako, zakonsko jasno, urejenemu področju, pa situacija v praksi ni vedno taka (Odločba US RS, št. U-I-224/00, Uradni list RS, Odločba US RS, št. 50/2002, Odločba US RS, št. U-I-21/04, Uradni list RS, št. 59/2005, 88/2005, Odločba US RS, št. U-I-21/04, Uradni list RS, št. 59/2005, Odločba US RS, št. U-I-240/05, Uradni list RS, št. 29/2007, Odločba US RS, št. U-I-335/05, Uradni list RS, št. 96/2007, Odločba US RS, št. U-I- 18/06, Uradni list RS, št. 33/2008, Odločba US RS, št. U-I- 304/06, Uradni list RS, št. 53/2008). Na terenu ter skozi prej navedeno domačo sodno prakso, smo priča številnim težavam izhajajočim prav iz neurejenih stvarnopravnih razmerij. Tudi v tuji literaturi zasledimo opise podobnih primerov. Avtor članka o zgodbah lastnikov zemljišč, ki jih je kanadska vlada 2009 vključila v načrte za novo vojaško bazo opisuje njihove izkušnje ter izkušnje osebnih nemoči ob to vrstnih postopkih (M. Friscolanti, 2009). Čeprav sicer nobena vlada ni naklonjena postopkom razlastnitvenja in se vedno, kot prve možnosti, posluži pogajanj, pa tudi pogajanja ne morejo teči v nedogled in za vsakršno ceno. Konec koncev država razpolaga z davkoplačevalskim denarjem in mora zanj odgovarjati (M. Friscolanti, 2009).

Tudi Ustavno sodišče Republike Slovenije občine vedno znova opozarja, da so odloki o kategorizaciji cest, ki potekajo po zemljiščih v lasti fizičnih ali pravnih oseb civilnega prava v neskladju z Ustavo, ter so dolžne ugotovljeno stanje odpraviti tako, da z lastniki dotičnih nepremičnin sklenejo pravne posle za pridobitev zemljišč ali začnejo postopke razlastitve ali skladno z zakonom izpeljejo postopke za ukinitvev takih javnih cest (Odločba US RS, št. U-I-224/00, Uradni list RS, št. 53/2008). V ta namen sedanji zakon o cestah ZCes-1 ohranja v veljavi člen prejšnjega zakona o javnih cestah ZJC-B, ki je s spremembami in dopolnitvami iz leta 2005 v 19. členu uvedel poseben razlastitveni postopek za javne ceste, ki so ob uveljavitvi zakona že obstajale in so potekale po nepremičninah, ki so bile v lasti fizičnih ali pravnih oseb civilnega prava. Kot navaja M. Krisper-Kramberger (2011, str.1414): »Postopek se je, od že prej zapisanega v Zakonu o urejanju prostora (ZUreP-1), razlikoval v tem, da je poenostavil ugotovitev javne koristi ter da razlastitveni upravičenec pridobi lastninsko pravico že z dokončnostjo razlastitvene odločbe.«. Da je problematika resnično pereča, daje vedeti tudi odločanje ustavnega sodišča, ki z izrazitim stopnjevanjem svojih sankcij v obdobju zadnjih let, vedno bolj jasno kaže na nestrinjanje sodne veje z neodzivnostjo upravnih, predvsem občinskih, organov (Odločba US RS, št. U-I-240/05, Uradni list RS, Odločba US RS, št. U-I-335/05, Uradni list RS).

## **2. NAMEN IN CILJI RAZISKOVANJA**

Tematika raziskave torej izhaja iz izkazanega razkoraka med zakonsko opredeljenim pojmom javne ceste ter dejanskim stanjem na področju javnih cest, s katerim se vsakodnevno srečujemo na terenu.

V ta namen je v raziskavi izvedena temeljna analiza stanja na področju javnih cest, pri čemer se bo le ta omejila na občine, na podlagi katerih se bo dalo sklepati na splošno stanje v državi. Namen raziskave je tako s teoretičnega stališča, v smislu pregleda in kritične ocene veljavne zakonodaje s področja urejanja javnih cest, kot s praktičnega stališča, z vidika posledic nezadostne definiranosti in nespoštovanja predpisov, ovrednotiti in predvideti posledice, ki so rezultat trenutnega stanja na področju pravnega položaja javnih cest, dobiti verodostojno podlago za konkretno oceno finančnih

posledic trenutnega stanja javnih cest ter trenda na tem področju, torej ali se stanje na lastninskopravnem področju javnih cest v Sloveniji izboljšuje, stagnira ali slabša. Cilj je dobiti pregled in oceno ali se, predvsem občine, stanja in posledic zavedajo ter ali imajo izdelane načrte reševanja problematike ter v kolikšni meri so občine sposobne urediti stanje na raziskovanem področju.

Končni namen raziskave je dobiti čim bolj verodostojno oceno vpliva ugotovljenega stanja na vpletene subjekte, to je tako upravljavce javnih cest, kot lastnike zemljišč ob javnih cestah ter seveda podati predlog za učinkovitejše reševanje problematike ter vzpostavitev zakonitega stanja na področju stvarnopravnega stanja javnih cest ter s tem pogoja za zagotavljanje ustreznih pogojev za izpolnjevanje osnovnega namena javnih cest, to je vzpostavitev pogojev za varno in neovirano odvijanje javnega cestnega prometa in zagotavljanja splošne varnosti vseh udeležencev v prometu.

Glavni cilj raziskave je ugotoviti primernost dolgoročnega najema zemljišč cestnega sveta slovenskih občinskih cest kot alternative možnostim, ki jih ponuja trenutna ureditev pri urejanju pravnega položaja obstoječih javnih cest. Želimo ugotoviti, kako odprti so ali upravljavci občinskih cest ali občani do alternativnih možnosti obstoječi ureditvi pri urejanju pravnega položaja obstoječih javnih cest v Sloveniji ter kako eni in drugi sprejemajo uvedbo možnosti dolgoročnega najema zemljišč namesto odkupa ali razlastitve s plačilom odškodnine pri urejanju pravnega položaja in posestnega stanja obstoječih javnih cest.

### **3. TEORETIČNA RAZISKOVALNA IZHODIŠČA**

Da je problematika še kako aktualna, tako v Sloveniji, kot drugod po svetu, kažejo številna objavljena dela, ki se ukvarjajo s to tematiko. Probleme, ki v praksi nastajajo, ko občinske javne ceste potekajo po zemljiščih v zasebni lasti, za domače področje zelo obširno obravnava M. Krisper Kramberger (2011, str. 1411), ki v enem od svojih člankov ugotavlja, da občine še po več kot dvajsetih letih od spremembe lastninsko pravnega režima v Sloveniji, izdajajo odloke o kategorizaciji cest na zemljiščih v zasebni lasti, ne da bi odkupile zemljišča od lastnikov ali izpeljale razlastitveni postopek.

Urejanje lokalnih cest in javnih poti po Zakonu o lokalni samoupravi spada med izvirne naloge občine, ki jih občine urejajo sicer samostojno (ZLS, 21. člen), kljub temu pa morajo biti njihovi akti urejanja skladni z Ustavo in zakoni (po M. Krisper Kramberger, 2011, str. 1412). Stvarnopravni režim javnih cest ureja Zakon o cestah, ki je nadomestil prejšnji Zakon o javnih cestah. Kot je že v poglavju obrazložitve teme navedeno, oba zakona, za zemljišča po katerih potekajo javne ceste, narekujejo, da morajo javne ceste imeti status javnega dobra ter biti v lasti občine za občinske ceste oziroma države za državne ceste. Pridobljen status javnega dobra, je tudi osnovni pogoj za uvrstitev ceste med javne ceste (ZCes-1, drugi odstavek 3. člena).

Delo občin nadzorujejo ministrstva in vlada (ZLS, 88. člen). V primeru ugotovljenega neskladja aktov občin z Ustavo ali zakonom, bi pristojno ministrstvo moralo občino na to opozoriti ter ji predlagati ustrezne rešitve. Če občina splošnega akta, kljub opozorilu, ne bi uskladila z Ustavo ali zakonom, bi ministrstvo moralo predlagati vladi, da zahteva začetek postopka pred Ustavnim sodiščem za oceno skladnosti predmetnega akta z Ustavo in zakonom. Če Ustavno sodišče nato ugotovi protiustavnost občinskega akta, občini naloži usklajitev z Ustavo in zakonom. V kolikor občina ustavne odločbe ne izvrši, sta mogoči celo predčasna razpustitev občinskega sveta ali predčasna razrešitev župana. O teh sankcijah odloča državni zbor na predlog vlade (ZLS, 90. b, 90. c, in 90. č člen V: M. Krisper Kramberger, 2011, str. 1412).

Enake določbe o nadzoru vsebuje tudi Zakon o državni upravi (ZDU-1, 64. člen), ki obenem določa tudi, da mora ministrstvo občini določiti tudi rok za usklajitev svojega splošnega akta. Če občina tega ne stori, mora ministrstvo vladi predlagati, da zahteva postopek pred Ustavnim sodiščem (M. Krisper Kramberger, 2011, str. 1412).

Kljub tako jasnim zakonsko predpisanim pristojnostim in obvezam, pa je iz obravnavanih zadev s tega področja pred Ustavnim sodiščem razvidno, da v praksi ni tako. Pobude so, kot je razvidno iz

primerov, namesto vlade, vlagali lastniki zemljišč (M. Krisper Kramberger, 2011, str. 1412). Po določbah Zakona o urejanju prostora se postopek za razlastitev namreč lahko začne le z vložitvijo zahteve razlastitvenega upravičenca (ZUreP-1, prvi odstavek 95. člena), ki pa sta ali država ali občina. V kolikor razlastitveni upravičenec postopka ne začne, lastnik oziroma razlastitveni zavezanec te pravice nima, ne more pa zahtevati niti odškodnine za svoje zemljišče, saj je pogoj za začetek nepravdnega postopka, v katerem lahko zahteva odškodnino, prav pravnomočna odločba o razlastitvi (ZUreP-1, 106. člen). Tako lastnik zemljišča, ob dejanski razlastitvi, ostaja dejansko brez pravnega sredstva, kar ima za posledico, da se lastniki zemljišč zatekajo k tako skrajni možnosti, kot je vloga za ustavno presojo občinskih splošnih aktov, po navadi odlokov o kategorizaciji cest.

Kot že navedeno, se postopek za razlastitev začne z vložitvijo zahteve razlastitvenega upravičenca (ZUreP-1, prvi odstavek 95. člena). Razlastitveni upravičenec je država, če se razlastitev izvaja za namene gradnje iz državne pristojnosti ter na podlagi državnega lokacijskega načrta ali lokacijskega načrta, oziroma občina, če se razlastitev izvaja za namene gradnje iz občinske pristojnosti ter na podlagi občinskega lokacijskega načrta ali prostorskega reda občine (ZUreP-1, 94. člen). Razlastitev lastninske pravice je dopustna le v javno korist in pod pogojem, da je za dosego javne koristi nujno potrebna in da je javna korist razlastitvenega namena v sorazmerju s posegom v zasebno lastnino. Razlastitev ter omejitve ali obremenitve lastninske pravice iz prvega odstavka tega člena ni dopustna, če država oziroma občina razpolaga z drugo ustrezno nepremičnino za dosego istega namena (ZUreP-1, 92. člen). Nepremičnina se lahko, med drugimi naštetimi razlogi, razlasti tudi za gradnjo ali prevzem objektov oziroma zemljišč gospodarske javne infrastrukture, med katere spadajo tudi javne ceste (ZUreP-1, 93. člen), vendar zgolj ob izpolnjenem pogoju, da je izkazana javna korist razlastitve. Šteje se, da je javna korist izkazana, če so predvidene v državnem oziroma občinskem lokacijskem načrtu (ZUreP-1, 93. člen).

Razlastitveni zavezanec, ki je fizična ali pravna oseba, ki ima v lasti nepremičnino, ki je predmet razlastitve ali oseba javnega prava, razen države (ZUreP-1, 94. člen), mora vložiti zahtevo za razlastitev najkasneje v roku štirih let po uveljavitvi prostorskega akta iz tretjega odstavka 93. člena tega zakona, ki je podlaga za razlastitev (ZUreP-1, 95. člen). Razlastitveni upravičenec sme vložiti predlog za razlastitev, če v roku 30 dni po vročitvi ponudbe za odkup lastniku nepremičnine ni uspel pridobiti nepremičnine s sklenitvijo pogodbe (ZUreP-1, 97. člen). Zahtevi za razlastitev je potrebno priložiti: seznam nepremičnin, predlaganih za razlastitev z njihovimi podatki iz zemljiškega katastra oziroma katastra stavb in zemljiške knjige, izvleček iz ustreznega prostorskega akta, ki je podlaga razlastitvi, razlastitveni elaborat z utemeljitvijo javne koristi in obrazložitvijo njene pravne podlage, roke izvajanja del, zaradi katerih je predlagana razlastitev ter ponudbo za odkup nepremičnine lastniku, s katero pa razlastitveni upravičenec ni uspel pridobiti nepremičnine s sklenitvijo pogodbe. V razlastitvenem elaboratu mora biti natančno določen obseg nepremičnin, glede katerih je predlagana razlastitev, pri čemer območje predlagane razlastitve ne sme presegati meje, določene z lokacijskim načrtom. Če je za izvedbo razlastitve potrebna parcelacija nepremičnine, mora razlastitveni elaborat vsebovati tudi načrt parcelacije oziroma natančen opis predvidene parcelacije (ZUreP-1, 98. člen). Če razlastitveni zavezanec v postopku razlastitve ugotovi, da bi z razlastitvijo dela njegovih nepremičnin zanj izgubila gospodarski pomen tudi lastninska pravica na ostalem delu njegovih nepremičnin, lahko zahteva, da razlastitveni upravičenec prevzame v last tudi te nepremičnine. Razlastitveni zavezanec vloži zahtevo iz prejšnjega odstavka pri upravnem organu, ki vodi postopek razlastitve. O zahtevi mora upravni organ odločiti hkrati z odločitvijo o razlastitvi (ZUreP-1, 99. člen). O zahtevah za razlastitev odločajo v upravnem postopku na prvi stopnji upravne enote (v nadaljnjem besedilu tega razdelka: upravni organ) ter na drugi stopnji ministrstvo za prostor, razen če je z drugim zakonom določena drugačna ureditev (ZUreP-1, 96. člen).

Upravni organ odloči o razlastitvi z odločbo po izvedenem ugotovitvenem postopku. Če se zahtevi ugodi ali delno ugodi, morajo biti v odločbi natančno navedene nepremičnine, ki se razlašajo. Z odločbo se določijo tudi roki, v katerih je dolžan razlastitveni upravičenec pričeti z gradnjo objekta oziroma objektov, zaradi katerih je bila razlastitev predlagana. Upravni organ lahko v odločbi določi rok ali datum za prevzem razlašene nepremičnine, če se o njem dogovorijo stranke postopka. O pritožbi zoper odločbo iz prejšnjega odstavka odloča ministrstvo za prostor. Pritožbeni organ o razlastitvenih zadevah odloča prednostno (ZUreP-1, 102. člen). Razlastitveni upravičenec pridobi

lastninsko pravico na razlaščenih nepremičninah s pravnomočno odločbo o razlastitvi ali na podlagi pravnomočne odločbe oziroma sporazuma iz 106. člena tega zakona, sklenjenega v obliki notarsko overjene listine. Razlastitveni upravičenec lahko prevzame posest na razlaščeni nepremičnini šele tedaj, ko plača odškodnino iz 106. člena tega zakona oziroma zagotovi razlaščencu posest na nadomestni nepremičnini oziroma po datumu, določenem v odločbi o razlastitvi, kadar ga odločba določa (ZUreP-1, 103. člen).

Lastniku pripada za razlaščeno nepremičnino ustreza odškodnina oziroma enakovredna nadomestna nepremičnina. Odškodnina obsega vrednost nepremičnine glede na njeno dejansko rabo in stranske stroške, povezane z razlastitvijo, kot so selitveni stroški, izgubljeni dobiček za čas selitve in morebitno zmanjšano vrednost preostale nepremičnine. Vrednost nepremičnine iz prvega odstavka tega člena ocenjujejo pooblaščen ocenjevalci vrednosti nepremičnin, sodno zapriseženi cenilci gradbene in kmetijske stroke ter cenilci nepremičnin s certifikatom Agencije Republike Slovenije za pospeševanje prestrukturiranja gospodarstva in spodbujanje prenove podjetij, pri čemer uporabljajo strokovne standarde za področje ocenjevanja nepremičnin. Poleg strokovnih standardov se upoštevajo tudi namembnost zemljišča pred uveljavitvijo prostorskega akta, ki je podlaga za razlastitev, kakor tudi dejansko stanje nepremičnine na dan uvedbe razlastitvenega postopka. Glede površine nepremičnine se upoštevajo podatki zemljiškega katastra oziroma katastra stavb, če ta obstaja in se nanaša na nepremičnino, ki se razlašča. Odškodnino in stroške, nastale v zvezi z razlastitvenim postopkom, plača razlastitveni upravičenec. Če razlaščenec noče sprejeti odškodnine, lahko razlastitveni upravičenec izpolni svojo obveznost s položitvijo odškodnine pri sodišču (ZUreP-1, 105. člen).

Najkasneje v 15 dneh po pravnomočnosti odločbe o razlastitvi upravni organ pozove razlastitvenega upravičenca in razlaščenca, da skleneta sporazum o odškodnini oziroma nadomestilu (v nadaljnjem besedilu: sporazum). V sporazumu za razlaščeno nepremičnino morajo biti določeni zlasti oblika in višina odškodnine, rok, v katerem je razlastitveni upravičenec dolžan izpolniti svojo odškodninsko obveznost in prevzeti razlaščeno nepremičnino, ali izročiti nadomestno nepremičnino. Sporazum mora navesti vse podatke potrebne za izpolnitev obveznosti razlastitvenega upravičenca. Sporazum je lahko podan na zapisnik pri upravnem organu, ki vodi postopek razlastitve. Upravni organ po prejemu sporazuma na zapisnik izda odločbo, v katero vključi vsebino sporazuma. Odločba se lahko izpodbija samo iz razlogov, iz katerih se po zakonu o splošnem upravnem postopku lahko izpodbija poravnava, vendar to ne zadrži izvršitve. Če je sporazum predložen v obliki notarsko overjene listine ima moč izvršilnega naslova. Če v dveh mesecih po pozivu iz prvega odstavka ni sklenjen sporazum o odškodnini oziroma nadomestilu, lahko razlastitveni upravičenec ali razlaščenec vloži predlog za odmero odškodnine oziroma določitev nadomestila v nepravdnem postopku na pristojnem sodišču (ZUreP-1, 106. člen).

Iz navedenega je razvidno, kako pomembno je pravilno in z zakonom skladno postopanje razlastitvenega upravičenca v primeru urejanja stvarnopravnega stanja na javnih cestah. V kolikor občina ali država ne postopata skladno z zakonom, je lastnik zemljišča dvakratno oškodovan: od lastninskih upravičenj mu ostane zgolj gola pravica (nuda proprietas), ob tem da pritiustaven odlok zanj pomeni dejansko razlastitev, ostane še brez pravnih sredstev, ki bi občino prisilile k ureditvi stanja, saj kot je v sodbi revizijskega sodišča navedeno:

*»Pristojnost nepravdnega sodišča za odmero odškodnine je določena le kot nadaljevanje razlastitvenega postopka in pogoj za njegovo zakonito dokončanje s prenosom lastninske pravice in posesti. Ravnanje tožene stranke, ki onemogoča izpolnitev procesnih predpostavk, da bi tožeča stranka sploh prišla do sodnega varstva - čeprav v nepravdnem postopku - je takšno nedopustno ravnanje, ki utemljuje odgovornost tožene stranke po določbah o splošni odškodninski odgovornosti po ZOR oziroma OZ. Protiustavna določitev spornih parcel za javno dobro in opustitev tožene stranke, da bi uporabila zakonsko možnost za odpravo te protiustavnosti, ima vse elemente civilnega delikta.«* (Sodba III Ips 59/2010, 7. september 2010 (v zvezi s sodbo Višjega sodišča v Ljubljani I Cpg 869/2009) V: PP, 2010, str. 21)

Obenem je, kot navaja Juhart (1998, str. 1217), razpolagalna komponenta lastnine temeljna sestavina lastninske pravice. Že omejitve, ki vplivajo na razpolagalno sposobnost posameznega subjekta, kot



so ob javnih cestah npr. že predpisana soglasij, ki so potrebna za nastop posledice razpolaganja, predstavljajo veliko omejitev razpolaganja z lastnino (po Juhart, 1998, str. 1218). »S kategorizacijo ceste, parcele, po katerih cesta poteka, postanejo javno dobro, s tem pa zemljiško knjižni lastnik zemljišča izgubi vse pravice, da bi ta zemljišča užival na najobsežnejši način in z njimi razpolagal.« (M. Debelak, 2012, str. 22).

Konkretna obravnavana tema se seveda dotika tudi vprašanja ureditve pravnega režima javnega dobra. V sedANJI pravni ureditvi je, kot ugotavlja M. Krisper Kramberger (1998, str. 1), razpršena v različnih predpisih, ki pa v svojih določbah niso popolnoma jasni. Avtorica je 1998 leta ugotavljala, da tedanja ureditev javnega dobra lastnike in uporabnike pušča v enaki pravni negotovosti, kot so bili v družbenolastninskem sistemu dobrin v splošni rabi (M. Krisper Kramberger, 1998, str. 9).

Glede obsežnosti posega v pravice posameznika s posledičnim dejanskim razlastnjenjem ob kategorizaciji cest na zemljiščih v zasebni lasti lahko potegnemo vzporednice tudi skozi razmišljanje A. Newcomba (2005, str. 6). Avtor se v članku ukvarja s pojavnimi oblikami razlastnjenja. Klasična oblika neposredne razlastitve je nacionalizacija za namen gradnje infrastrukture, pri čemer mednarodna stališča temeljijo na principu spoštovanja do že pridobljenih pravic, tako da razlastnjenje zaradi širšega javnega interesa ne prizadene pravic individualnega lastnika. Na drugi strani se srečujemo z nedirektno obliko razlastnjenja, ko država pravico zasebnika, preko regulatornih ukrepov, omeji do te mere, da pravica uporabe postane tako omejena, da lahko govorimo o dejanskem razlastnjenju, kljub temu da formalno lastnina ostane v lasti lastnika (A. Newcomb, 2005, str. 8). Zato je vprašanje razločevanja med še »legitimnim« obsegom regulacije, ki opravičuje omejevanje brez nadomestila ter prehodom v dejansko razlastitev zelo zapleteno. Avtor v članku nadalje poskuša odgovoriti ali sploh obstajajo primeri, ko kompenzacija, ob omejitvi uživanja lastnine ne bi bila upravičena in potrebna, nadalje, če taki primeri so, kateri so, ter tretjič, kateri razlogi opravičujejo omejitev uporabe lastnine brez nadomestila. Avtor članek zaključuje s sklepno mislijo, da so razlogi za naštetu lahko izhajajoči zgolj iz javnega reda in morale, zavarovanje človekovega zdravja in okolja ali kot obdavčitev (A. Newcomb, 2005, str. 19).

Obenem pa neurejena lastniška razmerja na cestah pomenijo izrazito oteženo vzdrževanje in varstvo take ceste ter negativne posledice za javni interes (M. Debelak, 2012, str. 1). Enako na pomembnost teme opozarja celo Ustavno sodišče Republike Slovenije v svojih številnih sodbah (Odločba US RS, št. U-I-72/10, U-I-113/10, U-I-154/10, U-I-160/10, U-I-200/10, U-I-211/10, U-I-220/10, U-I-221/10, U-I-223/10, U-I-234/10, U-I-269/10, U-I-278/10, U-I-60/2011, U-I-61/11, U-I-74/11, U-I-75/11, Uradni list RS, št. 60/2011).

Neurejena razmerja na področju javne cestne infrastrukture izrazito otežujejo tudi nadaljnji urbanistični razvoj, katerega naloga med drugim je, da iz kaotične poselitve druge polovice dvajsetega stoletja, zagotovi pogoje za uveljavitev standardov in zahtev sodobnega transporta ob revitalizaciji degradiranih območij ter zagotovitvi pravic in kvalitete življenja prebivalcev (J. M. Nichols, 2005, str. 151). Na vprašanje kako, v tako zapletenih in veliko dimenzionalnih postopkih kot so urejanje prostora in posegi v prostor, zagotoviti slednje, ni enoznačnega odgovora. Fryxell in Lo (2001, str. 1943) navajata dve glavni teoretični usmeritvi varstva okolja – funkcionalistično in deontološko. Prva dejanja sodi po njihovih učinkih, kar pri postopkih vpliva na okolje pomeni načelo maksimalnih koristi za maksimalno število ljudi, medtem ko deontološka teorija favorizira spoštovanje načel pred oziranjem na učinke.

Etika predstavlja enega bistvenih dejavnikov pri urejanju prostora. T. Beatley (V: H. Spaling, J. R. Wood, 1998, str. 106) v svoji raziskavi smatra, da je določitev namembnosti zemljišč definitivno stvar etične narave. Etika urejanja prostora je novo razvijajoče področje, ki se ukvarja z proučevanjem etičnih in moralnih ozadij urejanja prostora. T. Beatley (V: H. Spaling, J. R. Wood, 1998, str. 106) funkcionalistično – deontološkemu vidiku dodaja še antropološko – neatropološko dimenzijo posegov v prostor. Medtem, ko je po njegovem mnenju funkcionalistični princip opravičljiv, če zagotovi maksimalno uporabno vrednost za širšo družbo, deontološki princip sloni na sledenju načelom in postavljenim principom, ne glede na učinek, ko npr. obljuba oziroma zaveza

posamezniku preglasi splošne interese širše skupnosti. Antropološki princip pomene presoja zgolj skozi perspektivo ljudi, medtem ko se neantropološki princip ozira tudi na neživo naravo.

Številni arhitekturni teoretiki in kritiki so principe etičnega urejanja prostora poskušali strniti in zaobjeti v različnih kodeksih urbanistične in arhitekturne stroke. Za arhitekturo so značilni zunanji smotri in je po tej lastnosti bližje tehniki kot umetnosti. Arhitektura stalno izgraja prostor in nikoli ne doseže svoje končne oblike oziroma popolnosti (A. Prijon, 1991, str. 33). S svojim spreminjanjem naravnega okolja vpliva na življenje, organizacijo in navade ljudi. Zaradi navedenega, je zelo pomembno, kakšna je etika tistega, ki z načrtovanjem posegov v prostor kroji kvaliteto velikega števila ljudi. Ustvarjeni življenjski prostor in pogoji v njem, se odražajo v življenju konkretne človeške skupnosti. Zaradi tega je urbanizem dejavnik, ki odločilno prispeva k etiki in morali družbe kot celote (B. M. Zupančič, 1991, str. 21, 22).

Kako torej uskladiti urejanje prostora tako z vidika interesov širše družbe, kot vidika pravic posameznika je tema, ki okupira tako arhitekturno in urbanistično stroko na eni strani, kot pravne teoretike in psihologe, ki se ukvarjajo z osnovnimi človekovimi pravicami in njihovim dojemanjem na drugi strani. Čez relativnost oziroma dualnost problematike človekovih pravic je napravil poglobljen pregled M. Cerar (2000, str. 62). Med osnovnimi človekovimi pravicami je izpostavil tudi pravico do zasebne lastnine, ki pri urejanju prostora in načrtovanju posegov v prostor predstavlja pomemben dejavnik. Bistvena lastnost lastnine je namreč zmožnost popolnega razpolaganja z njo, kar pa je, kot je zgoraj prikazano, pri slabem načrtovanju urejanja prostora oziroma bolj pogosto pri izvajanju posegov v prostor brez sistematičnega predhodnega načrtovanja posegov, nemalokrat grobo kršena.

Tako je mnenje tudi domačega Ustavnega sodišča, ki, kot že omenjeno, v svojih številnih odločbah (Odločba US RS, št. U-I-240/05, Uradni list RS, Odločba US RS, št. U-I-335/05, Uradni list RS) opozarja na nesprejemljivost neurejenosti področja oziroma na nesprejemljivost nespoštovanja njegovih odločitev. Kljub temu, da so sodniki po Ustavi vezani le na Ustavo in zakon (E. Kerševan, 2012, str. 821), v sklepnih misli istega znanstvenega članka zaključuje, da kljub temu, da slovensko pravo ne spada med precendenčne pravne sisteme, pa se le to v sodobnih pravnih sistemih vedno bolj razvija. Vedno bolj se vzpostavlja vezanost na sodbe sodišč, ki so na podlagi svoje pravne avtoritete odgovorila na zahtevna vprašanja pravilne in pravične uporabe prava. Kljub temu, da precendenčno odločitev ne gre razumeti kot nekakšen podzakonski predpis *sui generis*, spoštovanje predhodnih odločitev tudi v neprecendenčnih pravnih sistemih pridobiva značilnost pravnega učinkovanja in pravne vezanosti sodišč pri reševanju bodočih predloženih sporov.

Glede na navedeno je pričakovati, da bodo bodoče odločitve sodišč v sporih na raziskovanem področju sledile dosednji vzpostavljeni praksi. V ta namen je Ministrstvo za notranje zadeve, Služba za lokalno samoupravo, v dopisu št. 032-43/2013/3, z dne 21.10.2013 pozvalo občine, da zaradi številnih neurejenih lastninskih razmerij na zemljiščih preko katerih potekajo občinske kategorizirane ceste in se posledično pojavlja problem zakonitega ukrepanja pristojnih organov, v izogib začetku postopkov pred Ustavnim sodiščem RS za oceno skladnosti odlokov o kategorizaciji občinskih cest z ustavo in zakonom, čim prej izvedejo postopke za ureditev lastninskih razmerij ali izvzamejo zemljišča iz kategorizacije občinskih cest (dopis št. 032-43/2013/3, z dne 21.10.2013).

Obstoječe stanje je posledica preteklega družbenega sistema, ki ni bil najbolj uspešen pri uresničevanju demokratičnosti, socialnosti in pravičnosti, katerega tudi dosednji sistem ni uspel preseči (A. Teršek, 2009, str. 237). Kot A. Teršek (2009, str. 237) v uvodu svojega znanstvenega članka poziva, mora biti oblikovanje vizije za uresničitev pristne in visoko socialne države prioriteta naloga države. Po njegovem mnenju je potrebno okrepiti zavest o doktrini in pozitivnih obveznostih države in jo tudi uporabiti v praksi. Predvsem mora biti v ospredju ustavno načelo socialne države ter človekove pravice, ki so s tem načelom najtesneje povezane. Posamezniku in njegovim temeljnim pravicam je treba zagotoviti prednost.

Navedena razmišljanja domačih in tujih pravnih strokovnjakov, kot zavzeta stališča pristojnega ministrstva kažejo, da je obstoječe stanje javnih občinskih cest doseglo kritično točko, po kateri so

spremembe nujne. Ker v obstoječem sistemu in razmerah do njih ne pride, je očitno potrebno dodati nove spodbude. Ugotoviti kje in katere so glavne pomanjkljivosti, da upravljavci cest hitreje ali sistematično sploh ne pristopajo k razreševanju problematike lastništva javnih cest v njihovem upravljanju je namen te raziskave. Z analizo obstoječega stanja ter ugotovitvijo pričakovanih vseh vpletenih strank pri urejanju lastniško pravnih razmerij na občinskih cestah verjamemo, da bo zapolnjena praznina raziskovanega področja in narejen korak k sanaciji obstoječega stanja. Samo z poznavanjem izhodiščnih razmer je namreč mogoče predvideti in podati učinkovite predloge za ureditev stanja.

Kakor je razvidno tudi iz tuje literature, se s podobno problematiko in težavami srečujejo tudi v drugih okoljih. Zelo slične razmere in posledične težave našim lahko razberemo iz nekaj poljskih raziskav. R. Żróbek in S. Żróbek (2008, str. 87) sta v svoji raziskavi predstavila najprej najbolj pogoste razloge za poseganje na zasebna zemljišča na Poljskem. Med naštetimi primeri sta kot prvega izpostavila potrebo po razlastninjenju zasebnih lastnikov zemljišč potrebnih prav za vzpostavitev javnih cest. Iz njunih navedb sledi, da je zakonsko predpisan postopek razlastninjenja za tovrstne primere podoben kot pri nas: utemeljitev javnega interesa povezanega s pridobitvijo določenega zemljišča, postopek pogajanj in poskus sporazuma o odkupu z trenutnim lastnikom zemljišča, odločitev o razlastninjenju v primeru neuspešnih pogajanj za določitev ustrezne kompenzacije za odvzeto zemljišče, morebitni pritožbeni postopek lastnika, odločitev v pritožbenem postopku ter plačilo določene kompenzacije za odvzem zemljišča, pri čemer ima postopek in iztek pogajanj velik pomen. V primeru uspešne pogoditve strank v postopku se razlastninjenju izognemo, postopek je veliko hitrejši, zato so pogajanja obvezni del postopka. V kolikor do soglasja ne pride, mora biti poskus za njegovo pridobitev iz dokumentacije jasno razviden. Kompenzacija odvzete nepremičnine naj bi bila primerljiva tržni vrednosti ter obenem sledila principu racionalne rabe javnih sredstev (R. Żróbek, S. Żróbek, 2008, str. 88).

Zaradi dolgotrajnosti opisanega postopka je bil na Poljskem leta 2003 sprejet zakon, ki je v primerih velikega javnega interesa za pridobitev zemljišč, kot npr. v primeru gradnje avtocestnega omrežja, določil postopek, ko potrebna zemljišča po zakonu postanejo last države. Tu pogajanj med državo in lastniki ni, zato tak postopek vzpostavlja velik konflikt med državo ter dotedanjimi zasebnimi lastniki predmetnih zemljišč in se ga država poslužila le v skrajnih primerih (R. Żróbek, S. Żróbek, 2008, str. 90). V večini držav je lastnina ustavno varovana kategorija, zato sta tudi postopek razlastitve ter načela kompenzacije za odvzeto lastnino močno regulirana (R. Żróbek, S. Żróbek, 2008, str. 90).

Osnovo za izračun višine pravične kompenzacije za odvzeto nepremičnino predstavlja njena tržna vrednost. Za izračun tržne vrednosti nepremičnine pa je potrebno upoštevati sledeče dejavnike: vrsto nepremičnine, lokacijo nepremičnine, vrsto rabe nepremičnine, stopnjo infrastrukturne opremljenosti nepremičnine, dejansko stanje nepremičnine in trenutno tržno ceno nepremičnine. Tržna cena nepremičnine se, v primeru, da bo bodoča namenska raba nepremičnine ostala enaka, določi glede na trenutno namensko rabo. Če bo bodoča raba povečala vrednost nepremičnine, je pri določitvi vrednosti potrebno upoštevati alternativno bodočo rabo. Če nepremičnino bremenijo kakršne koli pravice drugih na nepremičnini, je potrebno oceno vrednosti nepremičnine z ozirom na ta dejavnik znižati (R. Żróbek, S. Żróbek, 2008, str. 92).

Nepošten postopek in neustrezna višina nadomestila za odvzeto nepremičnino lahko povzroči napetosti med vlado in državljani ter zmanjša zaupanje v pravno državo. Zato je transparentnost in natančna in nedvoumna določenost vsake faze postopka izrednega pomena. Lastniki morajo dobiti pravično odškodnino in po odvzemu ne smejo biti v slabšem položaju kot pred njim. V ta namen so bila na delavnici v Helsinkih postavljena naslednja merila:

- cenitev in odškodnino naj pred zakonsko določenimi rešitvami določajo dejanske razmere;
- kompenzacija za odvzeto nepremičnino naj upošteva trenutno in bodočo situacijo, kot če lastnikom nepremičnina ne bi bila odvzeta;
- organ, ki postopek odvzema vodi, mora poskrbeti za zadostno število neodvisnih cenilcev ter lastnikom zagotoviti zadostno pravno pomoč za doseg njihovih zahtev;

– postopek naj ne bo zastrašujoč za lastnike, pač pa jim mora pomagati v zastopanju njihovih interesov (R. Žróbek, S. Žróbek, 2008, str. 93).

Enake zaključke v svoji raziskavi podajata M. Belej in M. Walacik (2008). Tudi onadva opozarjata, da nedoločeni, zapleteni postopki in napačno določena odškodnina za odvzete nepremičnine lahko povzročijo konflikte, ekonomsko nestabilnost ali celo padec gospodarske rasti (M. Belej, M. Walacik, 2008, str. 3). Po drugi strani je prav nemoč doseči prostovoljni dogovor o višini kompenzacije vzrok dolgotrajnosti postopkov (M. Belej, M. Walacik, 2008, str. 6). V iskanju prave metode za oceno vrednosti nepremičnine, je potrebno imeti pred očmi, da se nepremičnina izvirnemu lastniku odvzema zaradi javnega interesa na njej in za dosega splošne dobrobiti in interesa družbe. S takega stališča se zdi plačilo 500% tržne vrednosti zanjo za individualnega lastnika racionalno, kljub temu pa nesprejemljivo s stališča razpolaganja z javnimi sredstvi (M. Belej, M. Walacik, 2008, str. 7). Kot avtor v članku na str. 11 prikazuje je evidentno, da je razlika med ponujeno ceno zasebnega lastnika in ponujeno vrednostjo države ali lokalne oblasti velika. Razlog temu leži v dejstvu, da zasebni lastnik kot pravično odškodnino pričakuje odškodnino, ki poleg tržne vrednosti vključuje še vrednost morebitnega povišanja cene, kompenzacije za stroške iskanja in nakupa nove nepremičnine ter ostale povezane stroške (M. Belej, M. Walacik, 2008, str. 11 in 8), medtem ko sta država ali lokalna oblast na Poljskem dolžni upoštevati zakon in lahko ponudita le kompenzacijo enako tržni vrednosti (M. Belej, M. Walacik, 2008, str. 11).

Odgovor na vprašanje katero drugo izhodišče poleg tržne vrednosti bi bilo bolje vzeti kot izhodišče za izračun pravične odškodnine v svoji raziskavi išče tudi E. S. Kucharska. Za poljsko je sicer postavljeno vprašanje zgolj teoretične narave, ker poljska zakonodaja, kot je razvidno že iz zgoraj opisanih primerov, ne dopušča višje kompenzacije. Kljub temu avtor zaključuje, da bi tržna vrednost lahko pomenila zgolj najnižjo vrednost odškodnine, kateri bi bilo pravično dodati vsaj stroške iskanja nadomestne nepremičnine in izgubljenih bonitet, ki jih je izgubljena nepremičnina posameznemu lastniku pomenila ter tudi kompenzacijo za občutek izgube ob odvzemu nepremičnine. Tak pristop je seveda bolj zapleten, vendar pomeni pot do pravičnejše ocene (E. S. Kucharska, 2008, str. 91).

Z iskanjem dobre prakse in učinkovitih metod ob čim nižjemu konfliktu z vpletenimi strankami ob odvzemu zasebnih zemljišč za potrebe javnega dobra se v preglednem znanstvenem članku ukvarja tudi Azuela Antonio. Po prepričanju A. Antonia (2007, str. 18), vsaj v demokratičnih državah, splošno korist razumejo v ožjem smislu, ko ta zahteva razlastitev posameznikov. Razen izjeme v zadevi Kelo, kjer je Vrhovno sodišče odločilo, da splošni razvoj določenega območja opravičuje uporabo inštituta razlastitve posameznikov, v večini preostalega sveta sledijo tradiciji, da je razlastitev opravičljiva le v javnem interesu in le za javno splošno bodočo uporabo. Nekatere države se poslužujejo celo poimenske navedbe opravičljivih razlogov in namenov (A. Antonio, 2007, str. 18). Cilj čim natančnejše definicije pojma javno dobro je zreducirati možnosti arbitrarne uporabe inštituta razlastitve za zasebne interese (A. Antonio, 2007, str. 19). Naslednji pomembni vidik razlastitve je določitev odškodnine za odvzeto lastnino. Medtem, ko se večina držav nagiba k odškodnini v višini tržne vrednosti odvzete nepremičnine, so tudi po A. Antoniu (2007, str. 20) celotni stroški povezani z razlastitvijo precej višji in jih različne države rešujejo različno.

Za bodoče bolj učinkovito spopadanje z omenjenim problemom A. Antonio (2007, str. 23) v zaključnih besedah raziskave predlaga tri ukrepe:

- izvedba empiričnih raziskav o načinih uporabe inštituta razlastitve v posameznih deželah, o drugih metodah, ki se ob tem uporabljajo ter predvsem o družbenih posledicah uporabe, kar bi pomenilo vključitev širokega nabora raziskovalnih metod, vzpostavitve podatkovnih baz in vzporednih etnografskih karakteristik,
- razlastitev naj bo vključena med vidike pojma lastnine ter
- izvedba raziskave o trendih uporabe razlastitve v posameznih državah ter umestitev le-teh v širši kontekst reševanja te problematike.

Zelo obsežno raziskavo po posameznih državah s področja načinov in metod pridobivanja potrebnih zemljišč za potrebe urbane širitve so naredile tudi avtorice raziskave, objavljene v članku

International review of land supply and planning system (2013), pri čemer so pod drobnogled vzele 11 držav, od tega osem evropskih, ZDA, Južno Korejo in Novo Zelandijo. Z raziskavo so poskušale pridobiti podatke o dobrih praksah pridobivanja potrebnih zemljišč drugod, ki bi jih bilo s pridom možno uporabiti tudi v Veliki Britaniji. Raziskava se sicer v večini osredotoča na širitve urbaniziranih območij, obenem pa potrjuje dejstvo, da pomanjkljiva urejenost infrastrukture zavira tudi razvoj ostalih področij razvoja (International review of land supply and planning system, 2013, str. 37).

Isto v svoji raziskavi ugotavlja tudi S. Basnet (2012, str. 4), kjer poudarja, da je dobra infrastrukturna pokritost dežele z cestami, železnicami in ostalim transportnim omrežjem ključna za ekonomski razvoj države. Raziskava se osredotoča na iskanje mehanizmov in pristopov za uravnoteženo poseganje v socialne in ekonomske pravice posameznikov za pridobitev potrebnih zemljišč za izgradnjo javne infrastrukture na drugi strani. Posebno pridobivanje zemljišč s pomočjo razlastitev nikakor ni samo administrativno tehnično vprašanje, ampak seže tako na obsežno področje človekovih pravic, varnosti, kot trajnostnega razvoja. Zato se avtor v članku sprašuje ali obstoječa metoda razlastitve sploh še ustreza sodobnemu času ali ni morda potrebno rešitev za bodočnost poiskati v drugačnih pristopih. Kot alternativo ponuja najem zemljišč, pri čemer vlada do posameznikov pristopa s svežimi metodami sodelovanja, usklajevanja in vključitve družbe pri odločitvah. Tak pristop ustvarja »win-win« situacijo, kar olajša pridobitev zemljišč. Za hipotezo raziskave je postavil znanstveno vprašanje ali je najem zemljišča za potrebe gradnje novih cest smiselna alternativa razlastitvi (S. Basnet, 2012, str. 14). V zaključku navaja, da je dolgoročni najem zemljišča sicer končno dražji, prednost najema pa je nizka začetna investicija, lastniki ostanejo lastniki zemljišča, s čimer se ne posega v njihove človeške pravice, predvsem pa si lastniki na ta način zagotovijo redne dohodke. Sodelovanje in dogovarjanje vlade in lastnikov pri dogovarjanju za najem jih pripravi do partnerskega odnosa in tako odpravlja glavno negativno plat postopka razlastitve. V to vrstnem postopku se zato izognemo nepotrebnim stroškom povezanim z zakasnitvijo projekta. Pri najemu naj nobena stranka ni v prednosti, z ohranitvijo uravnoteženosti med stroški in smiselnimi koristmi obeh strani pa se zagotovi predvsem korist splošne družbe. Zato avtor v najemu vidi potencial za ohranjanje ravnotežja med potrebami razvoja v prostoru, ob čemer posamezni lastniki niso oškodovani (S. Basnet, 2012, str. 73).

#### **4. PRAKTIČNA RAZISKOVALNA IZHODIŠČA**

Glede na opisan namen in cilje raziskave je glavno zastavljeno znanstveno vprašanje raziskati ustreznost dolgoročnega najema kot alternative razlastitvi, kadar pogajanja z lastniki o odkupu zemljišč cestnega sveta občinskih cest niso uspešna. V povezavi z glavnim ciljem raziskave so kot praktična raziskovalna izhodišča postavljene tri hipoteze (v nadaljevanju: H1, H2, H3).

**H1: Veljavna zakonodaja s področja javnih cest ni dovolj močan vzvod za urejanje stvarnopravnega stanja javnih cest, niti ni v pomoč pri administrativnemu in funkcionalnemu urejanju javnih cest, zato se upravljalci cest ne ukvarjajo s sistematičnim odpravljanjem razlik med zakonsko predpisanim in obstoječim stanjem. Upravljalci občinskih cest z možnostmi, ki jih ponuja trenutna ureditev pri urejanju stvarnih pravic za obstoječe javne ceste, niso zadovoljni.**

Ta faza raziskave temelji na pregledu državnih in občinskih predpisov s področja urejanja javnih cest, od krovnega zakona o cestah in zakona o urejanju prostora, zakona o graditvi objektov, zakona o zemljiški knjigi, zakona o evidentiranju nepremičnin, do občinskih odlokov ter podzakonskih aktov, ki podrobneje opredeljujejo projektiranje, vzdrževanje in varstvo javnih cest. Analiza lahko pokaže morebitne pravne praznine v postopkih urejanja lastništva javnih cest ter posledične težave.

Iz analize pridobljenih odgovorov o stvarnopravnem stanju občinskih javnih cest lahko sklepamo na splošno stanje v državi. Analiza je podlaga za primerjavo odlokov o kategorizaciji občinskih cest s stvarnopravnim stanjem zemljišč, po katerih kategorizirane ceste potekajo. Rezultate stanja se primerja z zakonskimi predpisi in omejitvami iz česar je razvidna skladnost oziroma morebitna neskladnost predpisanega in realnega obstoječega stanja na tem področju.

Učinkovitost zakonodajnih mehanizmov se vsekakor odraža v pozitivnem trendu urejanja stanja v praksi. Stanje zadev na terenu je mogoče preverjati preko analitičnih metod primerjave pridobljenih podatkov, kot tudi analizo sodne prakse s tega področja. Iz analize pridobljenih odgovorov o posestnem stanju občinskih javnih cest v slovenskih občin, je mogoče razbrati trend urejenosti stvarnopravnega stanja javnih občinskih cest v obdobju samostojne države. Analiza da odgovor ali se postopki urejanja stvarnih pravic za občinske ceste sploh izvajajo, ali se v občinah problematike sploh zavedajo ter kam na lestvici občinskih prioritet jo uvrščajo. V zadnji fazi sledi ugotavljanje kakšno je zadovoljstvo upravljavcev cest z področnimi predpisi.

**H2: Upravljalci občinskih cest imajo zaradi neurejenega stvarnopravnega stanja občinskih cest pri izvajanju rednega vzdrževanja težave, v mestnih občinah sicer manjše kot v manjših občinah.**

Iz pridobljenih anketnih odgovorov narejena analiza stanja na področju izvajanja rednega vzdrževanja občinskih cest sledijo ugotovitve, v kakšnem obsegu je skladnost oziroma neskladnost stvarnopravnega stanja občinskih cest v praksi mogoče vzporediti s posledičnimi težavami pri izvajanju zakonsko predpisanega obsega rednega vzdrževanja javnih cest. Iz pridobljenih odgovorov sledi primerjava izkazanega stanjem in oblikovanostjo lokalne samouprave ter analiza ali stvarnopravni položaj na področju javnih občinskih cest uspešneje urejajo v manjših ali večjih občinah, ali so manjše občine bližje svojim občanom in zato uspešnejše v postopkih vzpostavljanja zakonitega stanja na področju svojih javnih cest ali se s to vrstno problematiko lažje in bolj uspešno spopadajo v večjih in posledično strokovno bolj specializiranih institucijah mestnih občin.

Pomembna je tudi analiza pričakovanih lastnikov zemljišč ob javnih cestah glede nivoja varovanja zasebne lastnine proti javnemu interesu. Rezultati lahko pokažejo ali oz. kako so pričakovanja zasebnih lastnikov odvisna od skupnosti v kateri živijo.

**H3: Dolgoročni najem zemljišč cestnega sveta slovenskih občinskih cest je tako za upravljavce občinskih cest kot lastnike bolj sprejemljiv od možnosti, ki jih ponuja trenutna ureditev pri urejanju pravnega položaja obstoječih javnih cestah.**

Kakor je razvidno tudi iz pregleda literature, se s podobno problematiko in težavami srečujejo tudi v drugih okoljih in Slovenija pri tem nikakor ni edina. Tudi druge države imajo podobno zakonodajo s področja pridobivanja zemljišč za potrebe zagotavljanja in gradnje javne infrastrukture in tudi druge države se soočajo s podobnimi problemi v postopku pridobivanja potrebnih zemljišč. Zaradi dolgotrajnosti in nepriljubljenosti zakonsko predpisanih postopkov se tudi v tujini ubadajo z vprašanjem kako postopke prilagoditi, tako da bodo zahtevali manj časa, stroškov ter predvsem tako, da bodo povzročali čim manj konfliktov med državo in dotedanjimi zasebnimi lastniki predmetnih zemljišč. Avtorji raziskav v tujini se sprašujejo ali obstoječa metoda razlastitve sploh še ustreza sodobnemu času ali ni morda potrebno rešitev za bodočnost poiskati v drugačnih pristopih. Kot alternativo ponujajo najem zemljišč, pri čemer vlada do posameznikov pristopa s svežimi metodami sodelovanja, usklajevanja in vključitve družbe pri odločitvah.

Hipoteza torej poskuša ugotoviti kako primeren bi bil prenos novih idej za slovensko področje in kako upravljavci in občani v Sloveniji ocenjujejo možnost dolgoročnega najema kot alternative obstoječi ureditvi pri urejanju pravnega položaja obstoječih javnih cest.

## **5. METODOLOGIJA IN INTERPRATACIJA**

Raziskava temelji predvsem na kritičnih predpostavkah, na eni strani obstoječega stanja urejenosti stvarnopravnih razmerij zemljišč po katerih tečejo javne ceste, veljavnih predpisov, ki področje urejajo ter postopkov in odločitev pristojnih sodišč, ter na drugi strani teoretičnih spoznanj tako domačih kot tujih avtorjev. Navedeno sloni na uporabi kritično-analitične, deskriptivno-analitične, zgodovinske ter teleološke razlage. Zgodovinska metoda omogoča proučevanje obstoječega stanja na raziskovanem področju ter zbiranje, kritično analiziranje in proučevanje pridobljenih virov in

dokumentov. Ta metoda se osredotoča na osvetlitev dosedanjih trendov in načinov pridobitve zasebnih zemljišč za potrebe širše družbe v javnem interesu. Eden izmed glavnih motivov uporabe te metode je vzpostavitev okvirja za končno evalvacijo izvedenih postopkov pridobitve zemljišč (S. Basnet, 2012, str. 15).

Z deskriptivno ali opisno metodo, pri kateri raziskovalec ne vpliva na potek proučevanih pojavov, temveč jih le opazuje, opisuje, kategorizira, primerja, kvalitativno in kvantitativno analizira, kondenzira, sintetizira ter sklepa na povezave, tudi vzročne, ter pri kateri razvrstitev opazovanih oseb ali pojavov ni odvisna od raziskovalca, uporabimo v drugem delu naloge pri zbiranju podatkov s snemanjem stanja, uporabo arhivov in anketiranjem (Kališnik, Fister, Lah, Smrekar Dekleva, 2003: 14). Različne tehnike zbiranja podatkov, od anketiranja, intervjuvanja, opazovanja do analize tekstov in dokumentov, zagotavljajo višjo objektivnost raziskave (R. K. Yin, 2003 V: S. Basnet, 2012, str. 15).

Anketiranje širše populacije in kasnejša analiza pridobljenih rezultatov je učinkovita metoda za poglobljeno razumevanje stanja raziskovanega problema v relativno kratkem času (S. Basnet, 2012, str. 15), zato je raziskava izpeljana s pomočjo anketnega vprašalnika. Njen namen je pridobiti informacije glede zastavljenega znanstvenega vprašanja ali je dolgoročni najem kot alternativa razlastitvi, kadar pogajanja z lastniki o odkupu zemljišč cestnega sveta občinskih cest niso uspešna, primeren tudi v slovenskem prostoru. Podrobneje nas zanima ali imajo upravljavci javnih cest in lastniki zemljiških parcel ob javnih cestah po njihovem mnenju ustrezne zakonske možnosti za ureditev lastniškega stanja cest ter ali upravljavci javnih cest problematiko neurejenih lastninskih razmerij na področju javnih cest zaznavajo kot pomemben (nepomemben) dejavnik v upravljanju. Zanima nas ali imajo upravljavci javnih cest sploh izdelane strategije reševanja obstoječega stanja. Pomembno je ugotoviti kakšen vpliv ima neurejeno stvarnopravno stanje občinskih cest na izvajanje zakonsko predpisanih nalog za zagotavljanje pogojev za splošno varnost javnega prometa. Pomembno je ugotoviti tudi kakšna so pričakovanja občanov glede zakonsko zagotovljenega varstva pravic zasebne lastnine pred varstvom javnega interesa ter kako ugotovljeno obstoječe stanje vpliva na odnos in zadovoljstvo občanov. Predvsem pa, kako odprti so ali upravljavci občinskih cest ali občani do alternativnih možnosti obstoječi ureditvi pri urejanju stvarnopravnega stanja obstoječih javnih cest v Sloveniji in če bi bila ponujena možnost dolgoročnega najema zemljišč cestnega sveta rešitev za izkazane težave pridobivanja zemljišč cestnega sveta v trenutnem stanju zakonske ureditve.

Anketni vprašalnik je razdeljen na vprašanja s katerimi so zajeti upravljavci cest ter nabor vprašanj s katerimi zajemamo (anketiramo) širšo javnost, občane. Po Breakwellu idr. (1995) gre torej za presečni tip ankete, enkratno anketiranje, cilj je primerjati različne skupine v populaciji.

Statistična analiza pridobljenih odgovorov (analiza podatkov) pa je osnova za potrditev oziroma ovrženje postavljenih hipotez ter kvantitetno in kvaliteto obdelavo le teh (Kališnik, Fister, Lah, Smrekar Dekleva, 2003: 13).

V zaključnem delu raziskave je smiselna predvsem uporaba sintetične metode, s pomočjo katere se združi ključne ugotovitve v zvezi z zastavljenimi hipotezami. Poleg sintetične metode sta uporabni še deduktivna in induktivna metoda, ki v zaključku strneta sklepe ugotovitve oziroma potrditve (ali ovržene) hipotez ter kritične poglede na obstoječe razmere na področju javnih občinskih cest v Sloveniji.

## **6. ZAKLJUČEK**

Problematika izhajajoča iz neurejenega stvarnopravnega stanja javnih cest je na teoretičnem področju v slovenskem prostoru skopo obravnavana. V pravni literaturi sicer najdemo kar nekaj prispevkov, ki situacijo obravnavajo zgolj z stvarnopravnega vidika ter pozivajo k ureditvi stanja, manj pa je teoretične osvetlitve druge problematike povezane s tem.

V raziskavi želimo celostno predstaviti področje, začenši s problemom dejanskega razlastninjenja lastnikov zemljišč brez pravične odškodnine in odvzema predvidenega pravnega varstva,

neučinkovitim odzivanjem nadzornih organov na taka ravnanja ter težavam, ki jih to vrstno stanje povzroča tako pri vzdrževanju, investicijskem vzdrževanju kot varovanju cest. V mednarodnopravnem področju je bilo sicer objavljenih nekaj znanstvenih prispevkov, ki pa se bolj osredotočajo na zgolj pravni vidik odvzema oziroma omejitve lastninske pravice in ne toliko na posledice in specifično področje cest. Zanimanje za stanje javnih cest namreč ni omejeno le na področje pravičnega odnosa do izvirnega lastnika zemljišča, pač pa javne ceste predstavljajo javni interes. Tako se na tem področju krešeta dva nasprotna interesa, pravica zemljiškoknjižnega lastnika zemljišča ter javni interes na drugi strani.

Glede na navedeno ter zastavljene cilje raziskave pričakujemo, da bo s pomočjo predvidenega anketnega vprašalnika zbrana velika količina podatkov in informacij glede zastavljenega osnovnega znanstvenega vprašanja ali je dolgoročni najem kot alternativa razlastitvi, primeren tudi v slovenskem prostoru.

Če povzamemo, prispevek raziskave k znanosti in stroki pričakujemo najprej v pridobitvi obsežne izvirne baze podatkov o obstoječem in pričakovanem stanju na področju urejanja stvarnopravnega stanja javnih cest, v katero bodo zajete pridobljene informacije čim večjega števila upravljavcev občinskih cest, to je občin, ter na drugi strani informacije čim obsežnejšega števila uporabnikov le teh. Prispevek k znanosti vidimo tudi v metodološko utemeljeni analizi pridobljenih rezultatov, ki bo v sklepnih fazi nadgrajena na interpretativnem nivoju. Končni rezultat raziskave pričakujemo v podanih smernicah in navodilih za izboljšanje stanja ter v obliki metodoloških priporočil za alternativne postopke urejanja na področju stvarnopravnega stanja javnih cest. Glede na obseg zastavljene raziskave ter relativno neraziskanost področja pa dopuščamo tudi možnost, da bo sam potek raziskave pokazal še na dodatne možnosti.

Spoznanja oziroma ugotovitve v tej raziskavi naj bi koristile vsem, ki so pristojni in lahko vplivajo na proces spreminjanja in izboljševanja zakonodaje. Izsledki naj bi pomagali tudi pristojnim resornim ministrstvom, občinam ter vsem drugim, ki so vključeni v proces gradnje, vzdrževanja in varstva javnega cestnega omrežja. Skratka raziskava želi opozoriti na ponavljajoči se kršitve pravic lastnikov zemljišč na eni strani, težave upravljavcev cest pri urejanju stanja ter posledic in nevarnosti izhajajočih iz tega stanja za širši javni interes.

Rezultati raziskave bodo lahko uporabljeni tudi za natančnejšo analizo stanja na področju slovenskih občin. Taka predstavitev stanja bi omogočila natančnejšo oceno možnih posledic, tako urejanja, kot ne urejanja stvarnopravnega stanja. V povezavi z izdelano metodo ovrednotenja stanja na raziskovanem področju, bi dobili celovito oceno stanja. Prikazati želimo vse dimenzije obstoječega stanja na upravljanje javnih cest ter odnos slovenskih občin, kot upravljavca občinskih javnih cest, do obstoječega stanja. Z raziskavo želimo predvsem raziskati stališča in pričakovanja upravljavcev glede potrebnih sprememb zakonodaje in morebitnih drugih možnosti in dejavnikov, ki bi pripeljali k izboljšanju stanja.

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# **Population Aging, Health Care Concerns and Real Estate Decisions Making: Canada**

Gregory P. Brown  
Nipissing University, Department of Sociology & Anthropology  
E-mail: gregb@nipissingu.ca

## **Abstract**

In Canada, as in almost all countries throughout the world, the population is rapidly aging. In 2016, the number of persons aged 65 or older reached 5.9 million (16.9% of the total population), for the first time exceeding the number of children (5.8 million; 16.6%) in the Canadian population. The number of 'old' Canadians, those aged 85 or older, is growing at four times the rate of the rest of the population, and is projected to grow from 770,000 (2.2% of the total) in 2016 to more than 2.6 million people, or 5.7% of the total population by 2051. Two-thirds of the population age 85 and older will be women. Beyond its broader economic implications, population aging, in particular among those 85 years of age and older, has important consequences for real estate decision making among older individuals themselves, their families and caretakers, individual health service providers and organizations, and the real estate development and sales industry itself. In the year 2016, one-third (32.0%) of people aged 85 and older lived in collective dwellings such as nursing homes and residences for senior citizens – by 2051, 864,000 Canadians 85 and older will be living in collective dwellings, mostly in cities, and another 891,000 in apartments and seniors' residences, accounting for more than sixty-five percent of the 'old' population. Most of this 'old' population will be concentrated in the few major Canadian cities – Montreal, Toronto and Vancouver. Formerly private home owners, this population will be moving into condominiums, apartment and commercial dwellings. In these larger cities there will be a strong demand for the development of condominium, apartment and commercial dwellings and other real estate options that recognize the personal preferences, household status, physical limitations, retail preferences, health care requirements and financial resources of what will be a largely female, financially resourced population that will, for the first time, live to be 100 years of age or more. There is a critical need to identify real estate planning, development and construction models that will reflect the needs and preferences of this rapidly growing 'old' population and market. This paper will explore and identify the factors that need to be included in such a model in order to accurately plan such housing, to ensure long-term sustainability, and return on investment.

**Keywords:** Population ageing, Health care, Real estate decision, Canada

## 1. Introduction

According to the United Nations (2015), the fastest growing segment of the world population is the group of persons aged 60 years or older; within this group, the ‘oldest-old’ those aged 80 years or more, are growing at an even faster rate, and will more than triple in numbers by 2050, from 125 million in 2015 to more than 434 million (United Nations, 2015). Such rapid population ageing foreshadows

*‘one of the most significant social transformations of the twenty-first century, with implications for nearly all sectors of society, including labour and financial markets, the demand for goods and services, such as housing, transportation and social protection, as well as family structures and intergenerational ties’* (United Nations, 2015, p.1)

Among the oldest-old, the proportion who experience some form of functional decline in physical or mental health requiring assistance with activities of daily living (eating, bathing, dressing, getting in and out of bed, toileting) will range from about 18% in the wealthiest economies, to more than 75% in the poorest (WHO, 2015). As rapid growth of the oldest-old population continues in combination with projected increases in average life expectancy globally to 80 years of age (WHO, 2015), and with significant numbers living to 100 years of age and beyond, the broad implications of rapid growth in this oldest-old population will result in profound changes in the demand for, location and structure of housing relative to support services for daily living, in household structure and living arrangements, and in the capitalization of real estate options (Bian, 2015; Robison & Moen, 2000).

Canada ranks in the middle of countries with respect to population aging, with 20.8% of the population aged 60 years or more in 2015, projected to grow to nearly one-third (32.8%) of the population by 2050 (United Nations, 2015). At an average life expectancy at birth of 82 years (Decady & Greenberg, 2014) much of any future growth in longevity will be marked by improvements in life expectancy among the oldest-old population (Oeppen & Vaupel, 2002; United Nations, 2015). Still, the increase in longevity among the oldest old is cause for concern among health care providers and other support services providers, with mounting evidence that functional impairment accelerates after age 65, and the rate of severe disability increases significantly after age 75 (Decady & Greenberg, 2014). In short, a growing number of oldest old Canadians will require increasingly comprehensive health and support services for daily living, and the government and personal pension and capital income to pay for such services. In Canada, with 36 million people spread across geographically the second largest country in the world, access to and provision of health and other support services will be unequally distributed across rural, northern and urban areas, with the oldest-old in rural areas more likely to at some point be resident in government-funded supported living and long-term care facilities, while those in urban areas will be more likely to be resident in their own homes for a lengthier time due to accessibility to home care supports, or living in corporate-owned supported living and long-term care facilities (Kulusky et al., 2012).

This paper will examine the relationships between population aging and the growth of the oldest old population in Canada, access to health care and support services, and real estate decision making both for the individual oldest old individual, and for the providers of services to this population. The future of real estate development in relation to this population segment will be discussed.

## 2. Dynamics and Outcomes of Population Aging in Canada

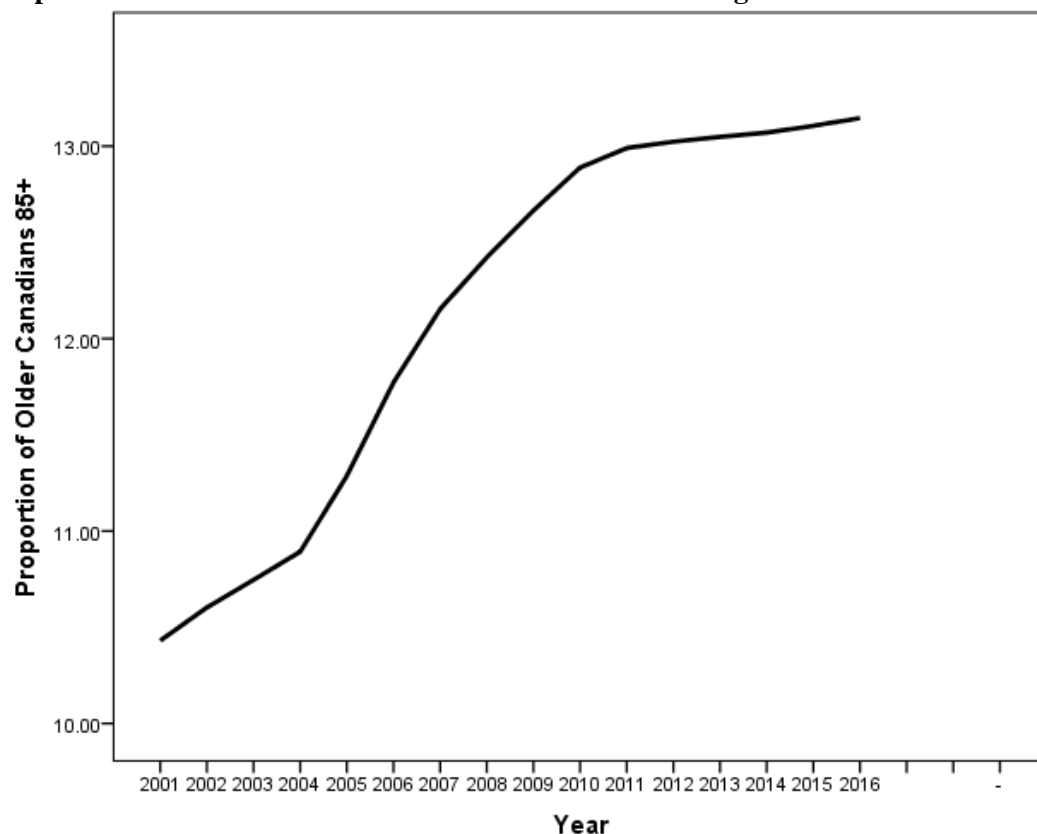
In Canada, with the ‘old’ population considered to be those who have reached the retirement age of 65 years, the population of ‘oldest old’ are measured as Canadians aged 85 years of age and older (Légeré et al., 2015). Between 2001 and 2016, the population aged 65 and older increased by 53% from 3,912,290 to 5,990,511; by comparison, the population segment 85 years of age and older increased by more than 93%, from 408,063 to 787,493 (Statistics Canada, 2017a). The rapid increase in the proportion of the population of 65 and older made up by the oldest old segment 85 years of age and older is shown in Figure 1 on the following page. By 2016, the oldest old accounted for more than 13% of those aged 65 years and older: by 2051, one-quarter of older Canadians will be 85

years of age or older. With overall declines in mortality, more males will survive into old and oldest old ages, decreasing the sex ratio differential (Bohnert et al., 2015).

The group of oldest old Canadians now account for 2.2% of the total population, and is growing at a rate four times greater than the overall Canadian population. By 2051, the number of oldest old Canadian will reach nearly 2.7 million people, accounting for 5.7% of the total population (Statistics Canada, 2017b).

**Figure 1:**

**Proportion of Older Canadians 65+ Who Are 85 Years of Age or Older 2001 - 2016**



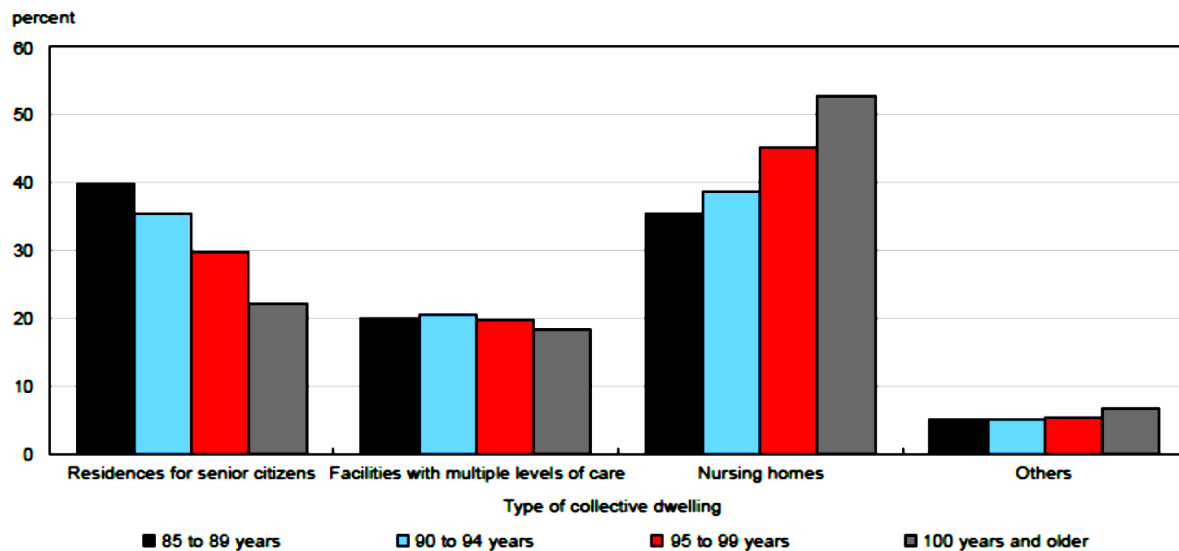
Ongoing growth in the oldest old population in Canada will be accompanied by increasing demand for health and support services as a consequence of increasing numbers of individuals evidencing functional declines in daily living activities, chronic health conditions, social isolation due to death of a partner or friends, reduced income, mental health conditions including dementia and Alzheimer's disease, and declining mobility (Andrew & Keefe, 2014; Légeré et al., 2015; Martel & Bélanger, 2000).

### 3. Social Aging Experience of the Oldest Old in Canada

Recent Canadian studies show that, paralleling international research, the prevalence of functional impairment in those aged 75 and older increases rapidly, and accelerates exponentially after age 85 (Andrew & Keefe, 2014; Guay et al., 2014). Though the majority of those 85 years of age still enjoy relatively good health and independence, a range of physical health, psychological and sociological factors, and environmental factors coalesce and intensify with each passing year: by aged 90, nearly half of the oldest old require assistance with some activities of daily living; at age 85 more than one-third will suffer from some form of dementia, mostly Alzheimer's disease; one in three will live in some type of collective dwelling (nursing home, long-term care facility, senior's residence) increasing to 40% by age 90 and 55% by age 95 (Andrew & Keefe, 2014; Chambers et al., 2016; Griffith et al., 2010; Guay et al., 2014; Légeré et al., 2015; Statistics Canada, 2017b). As partners, other family members and friends become ill or die, social isolation magnifies the physical, psychological, sociological and environmental changes impacting on the oldest old, exacerbating declines in physical and mental health (Andrew & Keefe, 2014; Levasseur et al., 2016). Ultimately,

as the aging process progresses, an increasing number will end up living in collective dwellings, as demonstrated in Figure 2.

**Figure 2:**  
**Proportion of Population Aged 85 Years of Age and Older Residing in Collective Dwellings by Type of Dwelling and Age Group 2016**

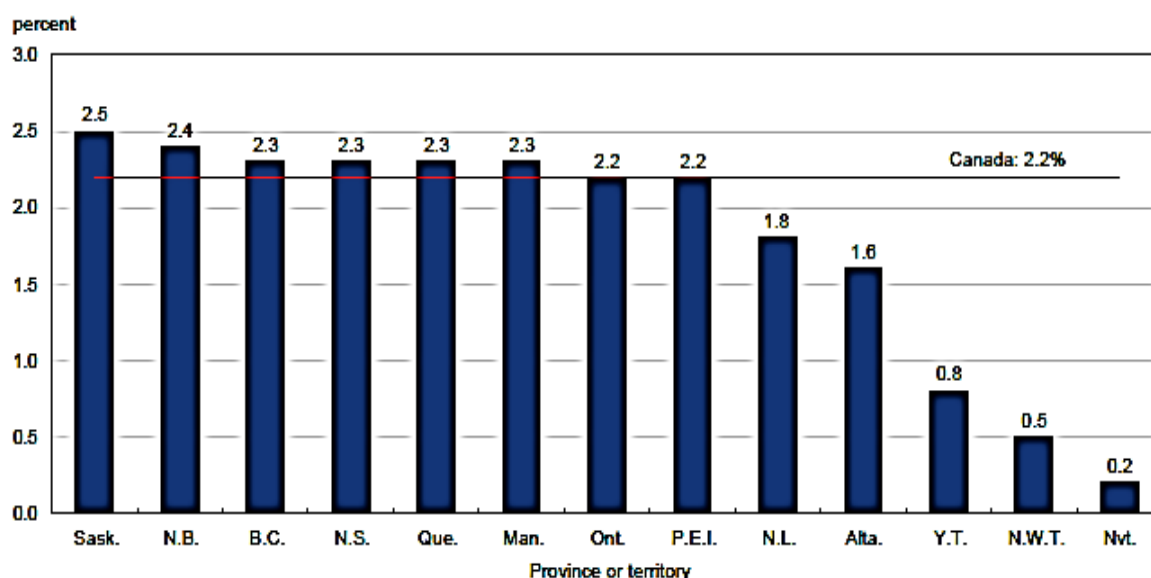


Source: Statistics Canada, Census of Population, 2016.

#### 4. Geography of the Oldest Old Population in Canada

The proportion of the Canadian population aged 85 and older, by province or territory of residence, is shown in Figure 3. The northern territories (Yukon, Northwest Territory and Nunavut) are largely rural, have large Indigenous populations with traditionally high fertility rates, and lower life expectancy, resulting in a smaller proportion of the population aged 85 or older (Statistics Canada, 2017b). In Saskatchewan, New Brunswick, Nova Scotia, Manitoba and Prince Edward Island, proportionately larger rural populations coupled with low rates of immigration and high internal out-migration have led to greater numbers of persons age 85 years and older, while in Alberta, a booming oil and resource-based economy has attracted high numbers of young people looking for employment, decreasing the proportion of the old and oldest old population. With more than one-third (35.5%) of Canadians clustered into three cities (Montreal,

**Figure 3:**  
**Proportion of Population Aged 85 Years of Age and Older, Canada, Provinces and Territories 2016**



Source: Statistics Canada, Census of Population, 2016.

Toronto and Vancouver), and with high numbers of persons age 85 and older clustered into suburban areas, cities and towns surrounding these major centres, the geography of and services for the oldest old population in Canada is now and in the future will be centered around these large urban centres, which also represent among the highest personal and family annual incomes in Canada, and the highest real estate home and commercial sales values (Brown, 2017; Ferreras, 2015).

In the larger cities and surrounding areas, the range of health and social support services available to the oldest old population will be extensive, though one-quarter will already be living in some form of collective housing, increasing to more than 50% by age 95 (Statistics Canada, 2017b; Kulusky et al., 2012). In smaller cities, towns and rural areas, where those aged 85 and older will make up proportionately more of the local population, the range of health and support services will be more restricted, leading to even higher proportions of the oldest old living in some form of collective housing (Kulusky et al., 2012; Kitchen et al., 2011).

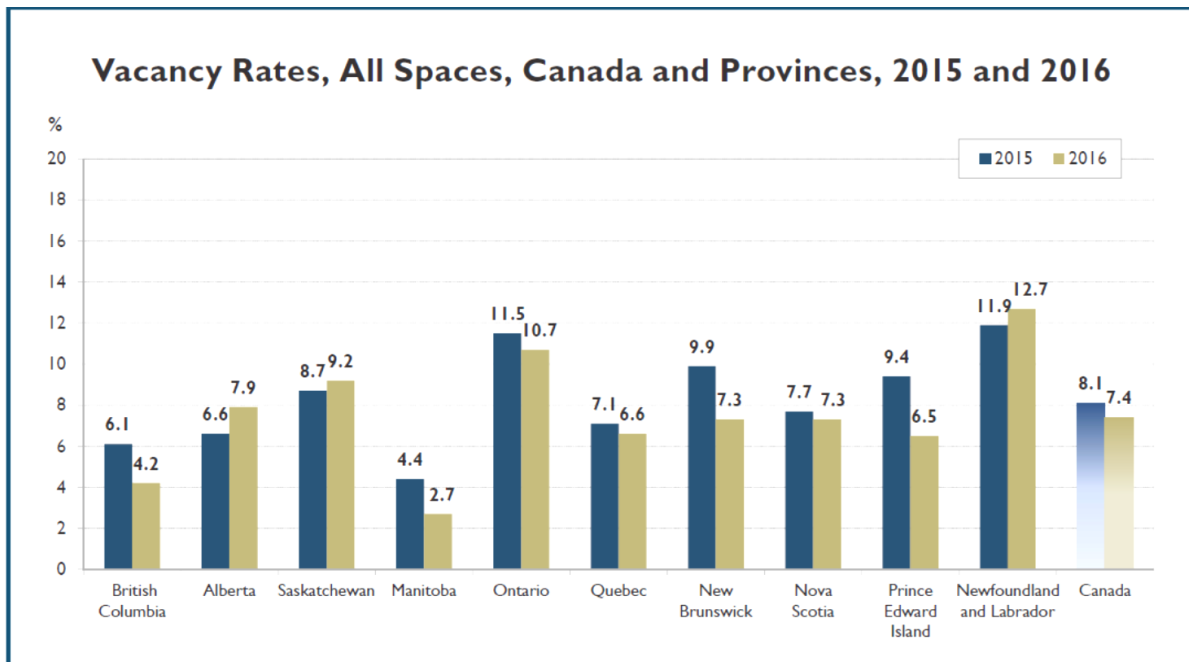
## **5. Economics of the Oldest Old Population in Canada**

Previous research shows that those 60 years of age and older expect to remain in their own home as they age, maintaining independence and reducing costs and reliance on others including family members (Bian, 2016; Robison & Moen, 2000). One key predictor of the decision to sell a home and move to collective housing is the homeowner's loan to value ratio (LTV); where the outstanding mortgage principal divided by the market value of the home is taken to be a measure of the homeowner's financial leverage or perhaps more specifically for those 60 years of age and older, a measure of financial security (Bian, 2016). With the family home the major source of wealth among most Canadians, and with pension coverage rates at less than 40% of Canadians, the LTV becomes an important measure of security and stability for older Canadians, and especially the oldest old.

Other studies point to slower economic growth and a shrinking tax base as a consequence of population aging, leading to unsustainability of the provision of publicly funded health care and support services, including collective housing options, for the old and oldest old population (Chand & Tung, 2014). It is estimated that Canadians 65 years of age and older cost three times as much to care for medically as younger Canadians, and costs continue to increase with age (Romanow, 2002; Légeré et al., 2015). A 2015 Canadian study forecasted that public spending on long-term care would need to increase by 5.5% per year through 2046 in order to meet basic requirements of care, and concluded that such increases in public spending would be impossible to achieve without difficult cuts in public spending in other areas (Hermus et al., 2015). Wister and Speechley (2015) forecast an even greater increase in health care costs, between 8% and 18% through 2036.

Though Canada has a publicly funded health care system, an increasingly attractive option is the growth of the privately owned collective housing industry, funded partially or in whole by old and oldest old individuals, according to a means test, or ability to pay (Wister & Speechley, 2015; MacDonald, 2015). As distinct from the acute care hospital, clinic and physician based universal health care system in Canada, long-term care facilities, nursing homes and seniors residences have traditionally been considered part of the 'social services system' and hence the provision of services are not considered a universal right, but rather a matter of ability to pay for a desired level of services (MacDonald, 2015). Consequently, a 'boom' in Canada in the demand for collective housing designed for those 65 years of age and older is projected through 2036 - 2051 (Marowits, 2015; CMHC, 2012), with an overall decline of nearly 10% nationally in vacancy spaces for those 65 years of age and older between 2015 and 2016, and substantial declines in vacancy rates in provinces (Figure 4) and largest cities (Figure 5) with the greatest numbers of the old and oldest old as early indications of its magnitude (CMHC, 2016).

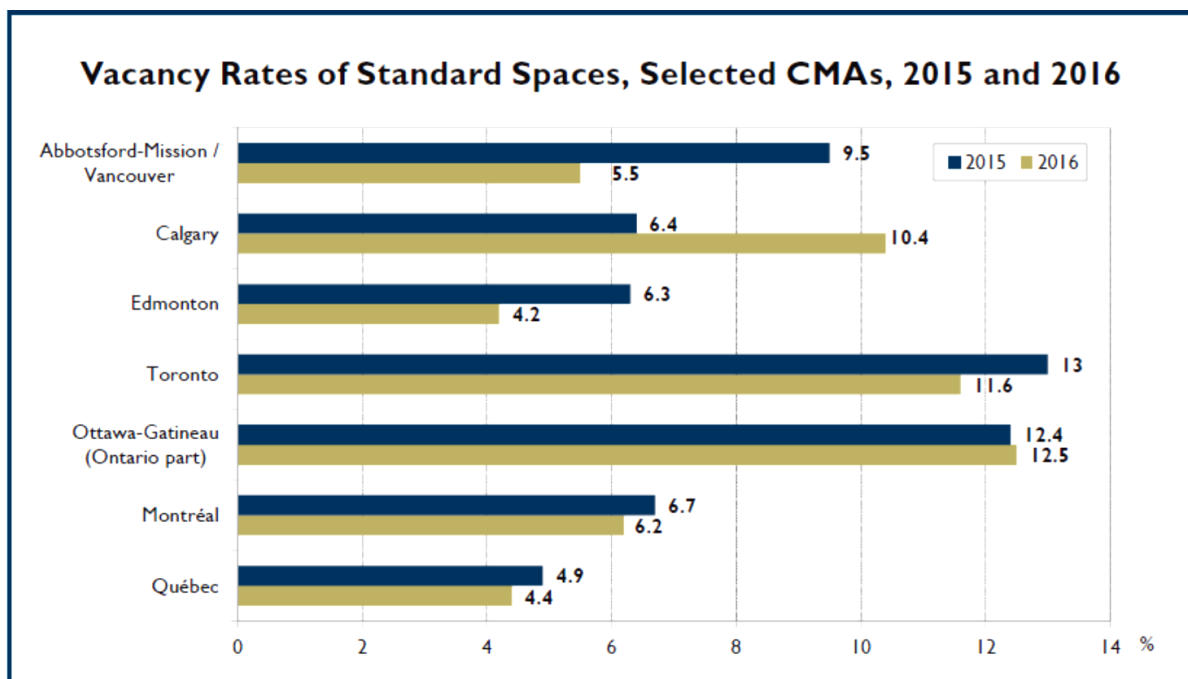
**Figure 4:**  
**Vacancy Rates, Collective Dwellings Servicing Population 65 Years of Age and Older, 2015 – 2016**



Source: CMHC Seniors' Housing Survey

As population aging continues in Canada through 2036 reaching its peak in 2051, and as economic growth declines and the overall tax base is reduced, the pressure on the over 65 years

**Figure 5**  
**Vacancy Rates, Collective Dwellings Servicing Population 65 Years of Age and Older By Selected Census Metropolitan (Urban) Area 2015 – 2016**



Source: CMHC Seniors' Housing Survey

of age population, and in particular those 85 years of age and older, to convert home equity into health care and support services, and ultimately supportive collective housing will increase proportionately with the inability of governments to publicly fund basic levels of care for seniors. At the same time, as the increasing number of old and oldest old Canadians begin to sell their homes in order to transition to other living arrangements, an excess of sellers over buyers is projected, depressing real estate sale values and home equity and increasing LTV ratios (Myers & Ryu, 2008), further increasing economic pressures on this population group.

Currently, options available to the old and oldest old in Canada to fund health care and support services include public funding (about 70% of total, MacDonald, 2015), pensions and benefit plans, savings, conversion of home equity, charitable foundations, and family members ((Banerjee, 2007; MacDonald, 2015; Hermus et al., 2015). Increasingly, governments, seniors, family members and health care and support service providers are looking to the private sector for help in addressing the looming crisis of care( Wister, 2016; MacDonald, 2015; Hermus et al., 2015; Canadian Medical Association, 2016).

## **6. Addressing the Real Estate Needs of the Oldest Old Population in Canada**

Though most Canadians plan on remaining in their own homes as they age, and although governments are promoting theoretically less costly home care options to assist seniors in remaining in their own homes, in fact the proportion of those 85 years of age and older moving into collective housing residences is projected to grow significantly until 2051 (Statistics Canada, 2017b). Although reverse mortgage programs are advertised as attractive option for funding retirement lifestyles, in fact fewer than 1% of seniors use this option, relying instead on pension and benefits, savings, or reduced costs to remain in the home while remaining in relatively good health (Shan, 2011; Bian 2016). According to most government subsidized plans, upon requiring collective housing, a means test is used to determine ability to pay, which may require liquidation of the senior's assets, including real estate (Hermus et al., 2015; MacDonald 2015). With many of the oldest old now projected to live beyond the age of 95, even those with apparently substantial financial assets may run out of funds before death, requiring them to rely on basic care provided though government subsidized collective housing.

Currently, development and real estate responses to the housing needs of the oldest old population have been limited to the construction of public and corporate owned seniors' condominiums and rental properties, and nursing homes and long-term care facilities, with 44% of facilities in private hands, 29% not-for profit organizations, and only 27% government operated (CIHI, 2014; Hermus et al., 2015). Typically, monthly costs run from \$2000.00 for a bachelor apartment with no services, to more than \$6000.00 per month with 'heavy' services (CIHI, 2014). With declining savings, pension and benefits income, possibly falling real estate values, and with so few seniors making use of reverse mortgage options, presumably preferring to protect for as long as possible the equity they have in their home, it is critical for developers to consider more attractive equity options for seniors, possibly in the form of privately owned condominium units within developments that offer a continuum of health care and support services that can be purchased as services, or reverse billed against equity in privately owned condominium properties. At this point, such an option is largely unavailable to seniors in Canada (Ontario Retirement Communities Association, 2013; Statistics Canada, 2012).

Given the rapid growth in the numbers of old and oldest old internationally, projected to more than triple from 125 million in 2015 to more than 434 million by 2050, and in Canada more than one-third of the total (United Nations, 2015) or more than 12 million, there will be a significant, relatively equity rich market of old and oldest old individuals seeking collective living alternatives that will provide a means to protect home equity, while at the same time affording a range of options to access health care and support services. In particular, it is expected that among the oldest old in Canada, representing nearly 2.7 million people and accounting for 5.7% of the total population (Statistics Canada, 2017b), there will be strong interest in housing alternatives and equity protection. Development of private ownership options for the old and oldest old to meet this objective appears to represent a real estate option worthy of investigation both in Canada, and internationally.



## 7. Conclusion

According to the Conference Board of Canada (Hermus et al., 2015),

*“the seniors of tomorrow may be more interested in private pay retirement and care environments than today’s seniors. Within the industry, there are some who are counting on a “healthier and wealthier” seniors cohort to demand high-end private pay retirement accommodation, including private pay for dementia care that has historically been in the domain of traditional long-term care institutions” (p.54).*

In 2017 in Canada, the financial, property development and real estate industries have yet to pay serious attention to the growing market of relatively ‘healthier and wealthier’ seniors, in particular those 85 years of age and older, who will have a strong interest in private ownership and control over their collective living arrangements, along with the capacity to pay through pension benefits and other income for the types of health care and support services they require. According to the Federation of Canadian Municipalities (2015), there are relatively few housing options available to seniors as they age toward requiring some form of collective housing, which is almost exclusively a high-cost rental accommodation, which erodes equity and savings quickly, impoverishing seniors as they age, and ultimately, increasing reliance on public funding at the oldest old ages, where health care and support services costs are highest Romanow, 2002; Légeré et al., 2015).

As the Canadian population ages, the design, development and marketing of privately-owned dwelling options for those aged 65 years of age and older, coupled with a continuum of on-site and off-site health care and support services that are both publicly funded and user pay, will, especially among the oldest old population, encourage individuals to seek out and access the living arrangements and services they require, while at the same time providing the opportunity to invest and protect equity and savings in the form of privately owned real estate. Such a real estate option will, over time, develop a strong re-sale market in privately owned seniors housing through 2051.

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# The question of social housing in the suburban context: A beare of diversity for peri-urban?

Ion Maleas

École Nationale Supérieure d'Architecture de Marseille

E-mail: ionmaleas@gmail.com

## Abstract

Collective social housing and suburban pavilions are two forms of housing that have dominated in recent French history, in urban and peri-urban reality as much as in political and academic discourse concerning housing and the urban in general. They are two forms of habitat that are rarely associated and almost never imagined to coexist (with social housing blocks and individual suburban pavilions serving as counter-examples one of the other). However, French urban policies of the recent years oblige us to reflect upon the possible relations and intersections between them. These reflections are imposed and at the same time inscribed, within a legal and policy paradox: the law “SRU” in 2000 puts forth an urban policy that prescribes a quota of social housing within the total housing stock of local municipalities, while in 2014 law “ALUR” seeks to limit suburbanization and urban sprawl by promoting a policy of facilitating suburban densification (thus encouraging the multiplication of private housing). It is a conflict between the social and the environmental preoccupations of the French State, leaving local governments responsible of enforcing contradicting policies (increase of social housing quota against private housing multiplication). Within this context, this article analyses the social and political justifications used in contemporary France in order to promote social housing, which are mainly the *right to housing*, and the issue of *social diversity* of neighborhoods. Subsequently, the relevance of these discourses for the suburban context is interrogated. There are certain successful social housing projects that have been implemented in pavilion neighborhoods in the recent years in France, but they remain marginal examples. The organization “SNL” (an active producer of social housing in the Parisian suburbs) is taken as an example, and the reasons of their marginalization on the national scale are examined. Furthermore, this research profits from a case study of a suburban housing estate, in the suburban territory of the city of Aix-en-Provence, which is currently facing pressures to densify. The pertinence of social diversity and of social housing construction is interrogated for this specific allotment and neighborhood. Finally, this paper opens a discussion on possible methods of resolving this contradiction between social housing and suburban densification policies: Through a thorough sociological understanding of the nature of each suburban context, and through inclusive and participatory processes of social housing construction (when the context proves productive), it may be possible to propose relevant and successful answers for the social and functional diversification of the suburban territory.

**Keywords:** Urban policies, Social housing, Social diversity, Suburbanization, Peri-urban, Pavilion housing

## 1. Introduction

The forms of collective social housing and suburban pavilions are two emblematic forms of housing in recent French history, in urban and peri-urban reality as much as in political and academic discourse concerning housing and the urban in general. They are two forms of habitat that are rarely associated and almost never imagined to coexist, with social housing blocks, the *grands ensembles* of Modernism, and the individual pavilion-residences, inspired from New Urbanism, often serving as counter-examples one of the other (Lelévrier, 2014). However, French urban policies of the recent years oblige us to reflect upon the possible relations and intersections between them. These reflections are imposed and at the same time inscribed, within a specific legal and policy framework provided most importantly by two laws: the law *SRU* (law of *solidarity and urban renovation*) of year 2000, and law *ALUR* (law of *access to housing and renewed urbanism* of year 2014), two laws that have been very influential for the debates around social housing and suburban housing respectively.

In this article this legal framework, and the urban policies it entails, are interrogated. From this interrogation, a strong hypothesis is formed that guides the research: currently at place, in the French suburban, is a policy contradiction due to the laws *SRU* and *ALUR*. This contradiction is between the application of policies that impose a specific percentage of social housing within the total housing stock of each municipality, and the application of policies that facilitate suburban densification (and therefore the multiplication of private housing).

In order to better understand this contradiction, the different policies that promote social housing in France today are examined. Social diversity is a central concept for encouraging social housing construction and it is therefore questioned in an effort to define the concept's pertinence for the suburban territory. The social character of suburban France is also analysed and certain examples of construction of social housing within the pavilion context are presented. These elements constitute the base for the opening of a discussion aiming at the resolution of the identified contradiction, and towards possible solutions for the systematic construction of social housing in the suburban context.

## 2. The legal and urban policy framework

Article 55 of law *SRU* prescribes a quota of at least 20% of social housing within the total housing stock of municipalities of more than 3500 inhabitants (1500 for *Ile-de-France*), and establishes a system of penalisation with annual and triennial fines arranged (calculated in relation to the level of social housing deficiency of each municipality) (law n° 2000-1208 of 13<sup>th</sup> of December 2000). The law, known as law *Duflot* of 2013, reinforces these requirements, bringing the percentage of social housing demanded to 25% for most cases (certain municipalities are exempted from the new quota), and increasing the level of fines (law n° 2013-61 of 18<sup>th</sup> of January 2013). In France 8,5% of municipalities have a population of over 3500, and within these municipalities lives 67,6% of the entire population (INSEE, 2017). In the national survey of 2016, 1218 municipalities did not respect their obligations in social housing stock and were subjected to fines totalling to 51 million euros, which in turn is used to finance the social housing sector (Ministère de la Cohésion des Territoires, 2017). On the other hand, the laws *Grenelles I* and *II* (laws n° 2009-967 of 3<sup>rd</sup> of August 2009 and n° 2010-788 of 12<sup>th</sup> of July 2010), followed most importantly by their successor law *ALUR* (law n° 2014-366 of 24<sup>th</sup> of March 2014), aim at limiting urban sprawl, and the consuming of natural and agricultural space, having environmental issues at their core and facilitating densification processes. The urban policies that follow render the opening of new zones for urbanisation very difficult for local governments and make the evaluation of densification possibilities an obligatory process at the local level. Additionally, plot subdivision processes are facilitated: the previous plot/construction ratio is abandoned for a method that allows more important building occupation per plot, and the municipalities previous right to define a minimum constructible plot is withdrawn (Ministère du Logement et de l'Égalité des Territoires, 2014). These developments particularly concern the peri-urban zones and more specifically the suburban territories. As it has been established by many and extended research programs in France, these patchy urban tissues of low

density, most commonly referred to as peri-urban or suburban regions, seem to constitute a genuine potential for densification processes (Bonnet, 2016; Hanrot, 2014). It is therefore possible to identify a policy contradiction in the suburban territory between the creation of private housing through plot subdivision (as facilitated by law *ALUR*) and the municipal necessity to construct social housing (as prescribed by law *SRU*). Indeed, private initiative plot subdivisions will lead to the multiplication of private dwellings, which in turn will aggravate the social housing deficit of the municipality. The problem of many municipalities whose tissue is mostly of suburban nature, many of them already deficient, is that there is not enough land left for them to realise the accustomed scale of construction projects for collective social housing while mobilising the traditional public bodies of social housing (*social landlords*). Additionally, municipalities that are not deficient at the moment, but that have an important part of their territory susceptible to be densified (i.e. suburban neighbourhoods), may find themselves in deficiency in the future, if the imminent process of densification is not accompanied by a systematic social housing construction policy at the scale of the suburban private plot. This is a legislative and policy paradox that manifests the contradictions between the *social* and the *environmental* preoccupations of the French state.

Today in France 56% of the population occupies a detached or semi-detached suburban dwelling (INSEE, 2016) and an impressive 87% considers this the ideal type of housing (and therefore wishes to, or plans to live in such a house) (Damon, 2017). At the same time 74% of all French households are eligible to apply for social housing (INSEE, 2009), with 4 million people considered to have inadequate or no housing, and an estimated 12,1 million people affected by the housing crisis (Fondation Abbé Pierre, 2017). Consequently, questions are raised, and are left open, concerning the housing future of France: How to stop urban sprawl while continuing to respect the right to housing? How to satisfy the population that wishes to live in a suburban context, while still offering housing to those in need? How can peri-urban municipalities accompany the suburban densification process with diffused and systematic production of social housing at the scale of the suburban plot?

### 3. The engines of social housing production

In the *French Code of Construction and Housing*, article L.411 defines the role of social housing in France: “The construction, development, attribution and management of social rental housing aims to improve the housing conditions for people of moderate or low income. These operations participate in the implementation of the right to housing and contribute to the necessary social diversity of cities and neighbourhoods” (*law n° 98-657 of 29<sup>th</sup> of July 1998*). These are the first phrases of book n°4 of the Code (titled *Low-Income Housing*), and they clearly evoke the two fundamental challenges of social housing in contemporary France: the right to housing and social diversity. Indeed, the right to housing is the central idea that led almost all European countries to the mass construction of social housing after World War 2 (Scanlon et al., 2015). Having been identified as a fundamental human right (in the *Universal Declaration of Human Rights*, signed in Paris in 1948), housing in Western Europe “was seen as part of the social contract between government and citizens which made up the welfare state” (Scanlon et al., 2015: 2). In France, providing housing to those that are unable to access it, has been a continuous preoccupation of the State with numerous laws and policies (Driant, 2015). In the 1990’s a re-centring of legal and political efforts concerning the right to housing is noticed. The application of the right to housing is the subject of a law in 1990 known as *Besson* (*law n° 90-449 of the 31<sup>st</sup> of May 1990*) which establishes a new register for urban policies concerning housing, with the focus of them being on the underprivileged population. This law constitutes the *PLAI* category of social housing (a category focused specifically on the most vulnerable), and renders citizen associations as important actors in the social housing sector (Driant, 2015; Stébé, 2016). During the same period, within the official vocabulary of urban policies, the new term of social diversity emerges (most notably with the laws of the 21<sup>st</sup> of December in 1989, known as the *anti-ghetto law*, and the law of *urban orientation* of 1991) (Driant, 2015). This concept is a response to the issue that had been identified of the ghettoization of certain populations that tend to inhabit the social housing blocks and the *grands ensembles*. In order to confront the socio-spatial segregation of the population, and the

socio-political division that it entails, the proposition put forth by the concept of social diversity is: the better distribution of social housing through-out the French territory, the diversification of the offer of housing, and therefore the social diversification of neighbourhoods (Charmes, Bacqué, 2016a; Lelévrier, 2014). The diversity envisioned refers to income levels and socio-professional categories, but also includes underlying intentions of a diversity that is also ethnic, racial, cultural, religious, etc. (Charmes, Bacqué, 2016b). The approach of this policy is of a spatial character, meaning that its logic is to bring together, in the same places, the different social groups. It is an approach that traverses all governmental and urban planning scales (regional, municipal, neighbourhood) (Driant, 2015). The driving concept of this policy is that its application could change a certain percentage of the population of a neighbourhood, therefore it could financially valorise its real-estate, and that the spatial proximity of different social groups would cultivate social integration and cohesion (Lelévrier, 2014).

However, the scientific community has convincingly pointed out the contradicting results between the two fundamental objectives of social housing (right to housing and social diversity): underprivileged population is most commonly housed in the less expensive social housing, which is found mostly in working-class neighbourhoods, therefore producing contradicting results to the objectives of social diversity policies (Jaillet, 2006). The right to housing may have a certain ethical impact and a political value that are not questioned neither at the European scale, nor at the national scale of France, but to the contrary, social diversity is a concept mobilised only by the French State at a national level (Houard, 2011; Scanlon et al., 2015; Dhoquois et al., 2016). Within the French context, social diversity has been a concept contested by a broad literature, due to the principles upon the concept it is founded upon, its underlying objectives, its strategies of application, its socio-political effects on the territory, etc. (Lelévrier, 2014; Driant, 2015; Charmes, Bacqué, 2016a; Stébé, 2016).

#### **4. Social diversity: a contested concept**

Social diversity has known, since its beginning, a success within the political world due to its “plastic character” (Jaillet, 2006: 351), due to “the notion’s polysemy and the diversity of interpretations that could be drawn from it. This polysemy favours a sort of consensus and legitimizes policies that could be vastly different from one another” as supported by Éric Charmes and Marie-Hélène Bacqué (2016b: 12). They describe two distinct policies, that are both implemented in the name of social diversity, that are nearly opposite to each other: One approach is to demolish collective social housing in working-class neighbourhoods in order to replace the housing offer with a more diverse one, thus profiting middle class households. The other approach is to construct social housing within middle and upper-class neighbourhoods. They are two sides of the same coin. In his work, Jean-Claude Driant specifies the laws that aim to apply these two approaches on the French territory (Driant, 2015):

The first side of the coin is the policy of urban renovation, born in 2003 with law *Borloo* (*law n° 2003-710 of 1<sup>st</sup> of August 2003*). This law promotes a policy of demolition/reconstruction, in an effort to improve the image and attractability of underprivileged neighbourhoods, by replacing social housing with a housing offer more attractive to middle-income brackets of the population. The relocation of underprivileged households in favour of higher-income ones “tends to exclude households that are considered fragile” (Driant, 2015: 176), and thus calls into question “the social justice of urban renovation” (Lelévrier, 2014: 11). In other words, this policy has been closely associated to a gentrification process of these neighbourhoods, with the “improvement” considered at once as “social, economic, fiscal and political” (Giroud, 2016: 55). Mathieu Giroud considers that this notion of social diversity is founded on a vision of the urban that is normalised, pacified and harmonised, with an objective of social control at the expense of manifestations of the underlying complexities and inequalities. Additionally, numerous researchers converge on the fact that *spatial proximity* of households with different incomes does not exclude *social distance* (to the contrary, it could reinforce it), and certainly does not resolve social, financial and political inequalities (Giroud, 2016; Stébé, 2016; Driant, 2015; Lelévrier, 2014; Jaillet, 2006). This policy of demolition/reconstruction of urban renovation is followed mostly in areas with collective social housing that are well situated in relation to urban centres (or at least well connected to them), in order to generate the attractiveness and surplus value through offering “an alternative to homeownership

in the suburban”, with dwellings that are affordable “without having to move to the periphery” (Lelévrier, 2014: 118).

The second side of the coin is none other than the imposing of a minimum quota of social housing within the total housing stock of municipalities (the infamous article 55 of law *SRU* in 2000, and its follower law *Dufflot* in 2013). If urban renovation policies are considered to offer an alternative to the peri-urban, then the *SRU* law could be considered as highly pertinent for the peri-urban territory. Law *SRU* has had an important influence on social housing production in deficient municipalities, with an increase of 12,7% between 1999 and 2011 (compared to the 6% increase in non-deficient municipalities), translating into an increase of new social housing units from 87 thousand in the period 2002-2004 to an estimation of 187 in the period 2014-2016 (Ministère de la Cohésion des Territoires, 2017; Vie Publique, 2014). To the contrary, in the region of Provence-Alps-Cote-d’Azur (where nearly 40% of deficient municipalities of France are found), an augmentation of deficient municipalities has been noted since 2008, attributed to the augmentation of the population and therefore the augmentation of private dwellings (Boullion, Couartou, 2016). This serves as an initial indication of the importance of the suburban in this debate, since private dwellings in France are mostly of suburban nature. Jean-Marc Stébé has identified that “city centres have proven to follow proactive policies”, achieving higher social housing quota than demanded, while, to the contrary, municipalities identified as “low performing” are found in the peri-urban of large urban centres, and/or are municipalities with an urban tissue of mostly suburban nature (Stébé, 2016: 115). In the national survey concerning article 55 of law *SRU*, in 2016 the municipalities that pay the highest fines are: Saint-Maur-des-Fossés, Neuilly-sur-Seine, Le Cannet, Sanary-sur-Mer and Grasse (Ministère de la Cohésion des Territoires, 2016). Four out of five of these municipalities have an important percentage of suburban tissue, while the fifth (Neuilly-sur-Seine being the only one without a suburban character) is found within the Parisian peri-urban (Google Maps, 2017). This is yet another indication that the obligations prescribed by law *SRU* pose problems to suburban and peri-urban communities.

However the question still remains: Does the political justification of social diversity (imposed on the territory through article 55 of law *SRU*) provide a valid discourse for these suburban and peri-urban communities?

## **5. The pertinence of social diversity for the peri-urban**

The peri-urban in France has become synonymous to suburban development, and it is a territory commonly accused of a socio-economic homogeny, accused of an absence of architectural and urban qualities, a territory plagued by its monofunctionality. Although the architectural and functional homogeny is not contested, the work of researchers such as Rodolphe Dodier, Anne Lambert and Éric Charmes (among others) clearly demonstrates the socio-economic and political diversity of the French peri-urban.

“There is not one but several peri-urbans” (Charmes et al., 2016: 85), and each of the peri-urbans varies as far as its attributes and qualities, with the populations that inhabit them having diverse characteristics and political orientations. While admitting a social diversity “slightly weaker than found in the urban space” (Dodier, 2007: 35-46) (the wealthiest and most impoverished social classes being less present), Rodolphe Dodier draws our attention to the presence of all social categories within the peri-urbans, and invites us to consider a more detailed geography and sociology of the suburban territory. Even within each of these peri-urbans, it is possible to discover a plurality of ways of living, of inhabitant relations to the neighbourhood and the city, aspects that depend on gender, age, ease of transport, etc (Cally, Dodier, 2007). Within all these variations, certain discriminations have also been identified based on class, nationality, ethnic / racial background, gender, etc (Lambert, 2015). All these elements make the important social diversity of the peri-urbans evident, and push us to surpass the polarization between urban and peri-urban. They demonstrate the importance of “focusing tirelessly on the *context* and in particular the inequalities between neighbourhoods and the social differentiations” (Sampson, 2016: 35), which is Robert Sampson’s most fundamental advice for socio-urban research.



As previously defined, public policies promoting social diversity are founded on a spatial approach. For the peri-urbans that Rodolphe Dodier studied in the periphery of the cities of Tours and Mans, certain socio-economical variations were identified to correlate with a “spatial differentiation” composed by three main elements: Firstly, the distance from the urban centre in *crowns*, meaning in a gradual manner of concentric circles. This is a constant and converging observation between researchers, with the value of houses and land, and thus the socio-economic level of inhabitants, decreasing progressively and in a fairly systematic manner depending on distance from the city-centre (Cailly, Dodier, 2007; Dodier, 2007; Driant, 2015; Jaillet, 2006). Secondly, there is a differentiation that correlates to quadrants around the city (north, east, south, west, etc.), meaning different development dynamics related to the specificity of the territory (landscape quality, location in relation to public infrastructures such as public transport, proximity to work basins, etc.). The third spatial differentiation that provokes socio-economic variations depends on real-estate segmentation and is specific and internal to each case (plot size, date of constructions, etc.) (Cailly, Dodier, 2007).

Through this detailed socio-spatial analysis, and through recognising the importance of the context in each case, the scale of the municipality and of a peri-urban is specified and analysed at the scale of the neighbourhood and of several peri-urbans. At this detailed scale it is possible to arrive to a deeper understanding of each neighbourhood of the peri-urbans, and thus it is possible to arrive to the reading of true homogeny, where it exists. Consequently, an urban policy of social diversity may begin to find fertile ground.

## 6. Social housing as a bearer of social diversity for the suburban?

With this detailed analysis, it is possible to identify that “in the first peri-urban concentric circle of large cities, the social situations are globally more specific, being middle-class” (Dodier, 2007: 35-46), and tending towards upper-class socio-economic classes. These types of peri-urbans are typically neighbourhoods built in the 1960’s, when the popularization of the private automobile and various urban policies promoted a diffused urbanisation (Callen, 2011; Haëntjens, 2011; Magri, 2015), with many of their quadrants characterised by large plots, usually well serviced by public infrastructures (schools, hospitals, etc.), well connected through public transport to the city centre (and thus to work basins), etc (Desgrandchamps et al., 2010; Dodier, 2006; Petitet, 2013). These characteristics of urban tissue and location provide favourable conditions both for densification processes (large plots, well serviced, etc) as much as for social housing construction (public transport, work basins proximity, etc) (Crozy, Touati, 2017; Desgrandchamps et al., 2010; Petitet, 2013). Additionally, the fact that the socio-economic groups that inhabit these neighbourhoods are mostly middle to upper class, social diversity policies through social housing construction find an ethically less conflictual legitimisation, while still responding to the other fundamental role of social housing (as defined in the *French Code of Construction and Housing*): the housing of disadvantaged households. Therefore, within many of the quadrants of the first concentric circles of the peri-urbans, a potentially fruitful ground is discovered for the productive intersection of the suburban (and its densification) and social housing (and therefore social diversity), while constantly taking care to avoid generalisations, i.e. paying attention to the context and the specificity of the social, economic, political characteristics of each neighbourhood, and to quadrant aspects such as real-estate fragmentation, landscape qualities, size of plots, date of constructions, etc...

Indeed, today in the peri-urbans of France there are examples of successful social housing constructions at the scale of the private plot. In particular, there are a number of associations / “*social micro-landlords*” which systematically produce defused, small-scale social housing projects (1 to 12 units per project), within suburban densification procedures (Primard, Touati, 2015). These actors produce *PLAI* social housing for the most vulnerable, and one of the necessary conditions for commencing a project is the location and its proximity to commodities (transport, commerce, schools, work basins, etc). The associations function within the legal space provided by the previously presented law *Besson* (profiting both from the possible role of associations within the social housing market, as much as the *PLAI* category of social housing). In

most cases, *PLAI* social housing already constitutes a form of social diversity for the suburban, however these social micro-landlords make an additional effort to produce student housing, housing for seniors, or intergenerational housing (all recognised as social housing by law SRU), when they are pertinent to the project characteristics. Additionally, there is an effort to provoke social diversity within each project, with residents of different ages, revenue levels, etc, chosen for small collective housing projects. Finally, when Étienne Primard (co-founder and president of such an association, the *Solidarité Nouvelles pour le Logement* – SNL) was questioned in an interview on the most essential criteria to launch a project, the first one he highlights is the possibility of mobilising neighbours in participatory procedures related to the project (Primard, Touati, 2015). Indeed, with the efforts to construct social housing in the suburban densification context of middle and upper class peri-urbans, the concept of social diversity is bound to face habitant opposition. Although social diversity is an idea well accepted by the majority of French population (ELABE, 2016), suburban densification is almost always met by local inhabitant discontent (Desgrandchamps et al., 2010) and the reputation of social housing only adds to that tension. Participatory processes are a way to debate and adjust a project, in order to achieve its construction while providing satisfactory solutions to all interested actors. These types of project procedures contribute to the constitution of new trades, new practices and abilities in urban fabrication (Biau et al., 2013). The detailed analysis of Dodier and the deeper understanding of the peri-urbans, as much as the attention to the context and the ascending from the terrain sociology of Sampson, engender a form of citizen participation in the sense of the importance given to the inhabitants word. More and more, these participatory approaches are considered as necessary elements of suburban densification processes (Hanrot, 2015; Petit, 2013). As far as the field of social housing, resident consultation and participation is already an integral part of social housing management (Demoulin, 2013; Dhoquois (eds.), 2016), and in the recent years Patrick Bouchain (an architect celebrated for his participatory project methods) has interrogated the possibilities of inhabitant participation in the conception and construction of social housing (Bouchain, 2010; 2016). Even for the highly contested and questioned urban policies of social diversity, the criticism is that they “are unfortunately often carried out without, and in some cases against, the concerned inhabitants” (Charmes, Bacqué, 2016c: 99-100). Furthermore, the potential of a participatory social diversity policy, through procedures that respect the existing inhabitants and create true social connections between existing and arriving residents, is often highlighted (Charmes, Bacqué, 2016a; Lelévrier, 2014).

It is important not to conceal the great complexity of participatory processes in the urban project, not to consider it a panacea for all urban problems. However, if in 30 years of experience of the SNL association in such a tense and conflictual field, they have never had a construction permit blocked by inhabitants (Touati (ed.), 2014), their model of operation could at least serve as a source of inspiration. With their projects well accepted both by local governments (since they contribute to the decreasing of fines related to law SRU), as much as by local residents (since they are informed and can influence the result through their participation - a result that always remains on the architectural scale of the suburban), the SNL model serves as a successful example. It is crucial to gain the relevant knowledge from such an example, specifically by following Étienne Primard’s advice on inhabitant consultation and participation throughout all planning scales, whether regional (and the constitution of regional planning documents, which in the French example are documents such as the *SCoT* or the *PLH*), or the scale of the municipality and its neighbourhoods (with planning documents such as the *plan local d’urbanisme* – *PLU*) (Primard, Touati, 2015). At the same time, it is equally important to indicate its weaknesses:

These associations are based on a certain political commitment of their founders, related to the right to housing of their co-citizens, and the great majority of their personnel are volunteers (in the case of SNL: 70 employees and 1127 volunteers) (SNL-Union, 2017). Furthermore, this method of production of social housing within suburban densification processes will continue to remain marginal if it doesn’t include financial interests for private landlords (owners of the vast majority of suburban land). In order to achieve the popularisation of such an urban policy, and make the diffused production of social housing at the suburban scale systematic, it is necessary to consider the reality of densification that is bound to be mostly at the scale of the private suburban plot, initiated by private landlords, and must therefore offer a certain financial compensation to the owner.

## 7. Conclusion

Beyond committed associations, there are other actors who are interested in this subject, actors that must be mobilised in the effort to provide solutions. First of all, the municipalities (as previously evoked), have an interest in finding ways to confront the SRU fines they are currently paying, while providing housing through suburban densification. Furthermore, the traditional bodies of social housing (social landlords) must also be mobilised. During the last decade, these social landlords have become more and more interested in smaller project scales (with 95% of constructed social housing being small collective housing complexes, intermediary housing, or individual dwellings) (Stébé, 2016). Their collaboration with private developers and constructors is becoming more common, and thus easier and simpler with time (Dhoquois, 2016). Additionally, these traditional social landlords have also started committing to projects with a more urban design/renewal character, by including public spaces, shops, etc) (Couartou, 2016). With the hypothesis of the commitment of these social landlords/urban designers in the suburban, the beginning of an urban, architectural and functional diversity is possible to be imagined. The example of social micro-landlords, such as SNL, could effectively serve as operating examples for these actors (such as the municipalities themselves, the traditional social landlords, etc).

At the moment, the regulatory apparatus that could clearly and easily associate inhabitants, municipalities and social landlords (whether micro-landlord, traditional landlord, landlord/urban designer, etc) in construction operations, is missing. The need for solutions that are more attractive financially for more of the implicated actors, also demands thorough reflection. Urban, architectural and landscape propositions that respond to the environmental objective of densification, and at the same time respond to the social objective of social housing, must be provided. The ensemble of these reflections on the subject must take into account all pertinent scales, starting from the scale of the EU and its urban policies, to the national, the regional, the scale of the municipalities, of neighbourhoods, to finally arrive to the scale of the inhabitant and his private plot.

The propositions should be achieved through participatory procedures, in order to offer solutions that are socially, politically, financially and architecturally viable, enduring and sustainable for the peri-urban environments of the future.

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# **Analysis of individual and structural factors in the coexistence of young (families) and parents**

Tjaša Klavora

Student at Nova University, European faculty of Law, Slovenia

E-mail: tjasa.klavora@gmail.com

## **Abstract**

Slovenia belongs to the very top of European countries in terms of extended cohabitation of parents and their children or young families. The largest survey of the European Labor Force Survey (2007) ranked Slovenia in second place in Europe immediately after Slovakia. It is also interesting that our neighbor Italy is extremely renowned for having extended the presence of young families with parents for Slovenia. According to the European Labor Force Survey, the average home leaves their parents' home at 29.5 years and men at 31.5 years. Economic, social, cultural, political and demographic changes have a significant impact on the traditional family, social and intergenerational relations. The problem is increasingly discussed at both political and research levels. These factors are, on the one hand, individual and extend to the microstructure on the other side, but are structural, thus reflecting the characteristics of the environment and explaining why individuals in the same company follow similar patterns of departure from home. In a survey based on a quantitative method, a group of 21 to 30 years of age was surveyed. The results show that the trend of "Hotel Mama" in Slovenia is increasing, which means that more and more young and young families live an extended stay at home, with their parents or grandparents. The results show that the most important reason is the financial situation, followed by the problems of regular employment, but as many as 30% of respondent's state that they are afraid of responsibility. It seems that it is very important for Slovenes to have our own property, which also means a home ownership. Housing policy operates on the basis of Article 78 of the Constitution of the Republic of Slovenia, according to which the state is responsible for creating the possibility for citizens to obtain adequate housing. Although the state offers various benefits in the field of housing, this independence is extremely difficult to achieve and impossible to maintain if the family does not have a regular monthly inflow. According to the survey, according to young people, the state in the field of youth housing policy is quite unsuccessful. The respondents are unanimous; the state should provide young people and young families with legislative regulation with easier access to the first independent housing.

**Key words:** young families, housing policy, individual factors, structural factors, Slovenia

## 1. Uvod

Ritem in način življenja v današnji družbi posledično vplivata na spremembe v življenju posameznikov. Kdaj pravzaprav postanemo odrasli? Ali obstaja meja med mladostjo in odraslostjo? Podaljšano izobraževanje, negotovost posameznika, kaj v življenju pravzaprav sploh želi postati, brezposelnost in finančne težave, ki jih le-ta prinaša, so le nekateri izmed vzrokov, da mladi vedno dlje časa ostajajo doma pri svojih starših ali starih starših. Danes povsod po svetu, tudi pri nas, zelo pogosto zasledimo posebno poimenovanje za podaljšano življenje otrok pri starših – »sindrom hotela mama«. Na to, kdaj pride do odselitve mladih in v kakšno življenjsko ureditev ta pelje, vpliva vsak posameznik in okoliščine, v katerih se znajde. Ti dejavniki so lahko individualni ali strukturni. Želimo ugotoviti mejo med mladostjo in odraslostjo ter vzroke in posledice podaljšanega življenja pri starših ter odkriti dejavnike, ki vplivajo na odhod mladih v samostojno življenje. Z uporabo in analizo rezultatov anketnega vprašalnika bo predstavljeno realno stanje podaljšanega življenja mladih pri starših. Ključno dejstvo pa je to, da je mladim, kljub želji zaživeti sami, zaradi ekonomskega položaja (brezposelnosti) in podaljšanega šolanja vse to onemogočeno oziroma precej oteženo.

Glavni cilj je osvetliti probleme, ki se pojavljajo pri odločitvi za odselitev mladih in mladih družin od svojih staršev. Pogosto tudi prostorska stiska ne predstavlja dovolj velikega vzroka za odselitev, kot tudi ne medgeneracijske razlike. V zvezi z ugodjem, ki ga mladi uživajo z bivanjem v gospodinjstvu staršev, ugotavljamo, da je družbeno življenje mladih izredno virtualizirano, kar pomeni, da mladi doma večino časa preživijo na spletu, pošiljajo nadpovprečno veliko besedilnih sporočil in igrajo računalniške igrice. V tem smislu lahko rečemo, da lastnosti, ki se v popularnem diskurzu pripisujejo generaciji Y<sup>46</sup>, prispevajo svoj delež k podaljševanju bivanja pri starših. Vsekakor zveni smiselno, da se mladi, v kolikor imajo vzpostavljene dobre odnose s starši in ob podpori informacijsko-komunikacijskih tehnologij, raje odločajo za sobivanje kot za samostojno življenje.<sup>47</sup>

Neredna zaposlitev ni glavni vzrok, da mlade družine živijo pri starših. Obstaja namreč še veliko drugih dejavnikov, ki vpliva na to podaljšanje sobivanja mladih s starši. Kulturni dejavnik, ki botruje odločitvi ostati doma in se tako izogniti životarjenju, izredno vpliva na miselnost mladih.

## 2. Ocena dosedanjih raziskovanj obravnavanega področja

### 2.1. Italija

»Tudi za našo sosedo Italijo je značilno, da mladi dolgo živijo pri starših,« so zapisale avtorice članka z naslovom »ITALIAN "STAY AT HOME" CHILDREN: ATTITUDES AND CONSTRAINTS«<sup>48</sup>, Adele Menniti, Maura Misiti in Miria Savioli. Povprečna starost ob odhodu od doma se je v večini zahodnih držav povišala, vendar je starost ob selitvi, dosežena v Italiji, med najvišjimi v severnih evropskih državah in v Združenih državah Amerike. Italijanski mladi, prav tako kot tudi mladi po svetu, dolgo študirajo in se pozno odločijo za zvezo in samostojno življenje ter ustvarjanje družine. Ti dejavniki imajo pomemben vpliv na demografske procese, kar je povzročilo preložitve faze »odraslosti«. Dejstvo je, da se pomembni demografski dogodki, kot so poroke in rojstvo prvega otroka, pojavijo v starosti po 30. rojstnem dnevu. Povprečna starost ob sklenitvi zakonske zveze žensk v Italiji se je povišala z 24,4 leta v letu 1984 na nad kot 28 let, medtem ko se za rojstvo prvega otroka odločajo po 28. letu starosti. Razlogi za takšne spremembe so lahko strukturne narave (višja brezposelnost mladih, daljše šolanje in pomanjkanje razpoložljivih

<sup>46</sup> Osnovna lastnost generacije Y (okvirno rojenih med leti 1985 in 2000) je vraščenost v svet digitalnih tehnologij. Gre za prvo generacijo, ki ji je bila digitalna tehnologija 'položena v zibelko'. Posledično so pripadniki te generacije nenehno povezani z digitalnimi oblikami prenosa informacij, kar v marsičem vpliva na njihovo vsakodnevno funkcioniranje. Ena izmed lastnosti te generacije, ki jo izpostavi večina avtorjev, je tudi zelo izražena potreba po zabavi. Za generacijo Y velja tudi ocena, da sorazmerno visoko vrednotijo družinsko življenje in se dobro razumejo s starši (Brečko 2005, str. 48–55).

<sup>47</sup> Lavrič M., 2011, str. 5.

<sup>48</sup> A. Menniti, M. Misiti in M. Savioli, Italian "Stay at home" children: Attitudes and Constraints, 1998, str. 99.



stanovanj) ali kulturne vrste. Podrobnejše analize prikazujejo, da je v Italiji danes manj pomembno, da se mladi čim prej zaposlijo oziroma jih starši vzpodbujajo k daljšemu šolanju. Da bi razumeli, zakaj mladi Italijani ne zapustijo doma, je v študiji uporabljen večdimenzionalni pristop, ki ga je uporabila IRP-CNR (Inštitut za raziskave Nacionalnega raziskovalnega sveta prebivalstva). Poglobljeno je bila opravljena raziskava za pogoje družinskega življenja ter prednosti in slabosti, ki jih otroci in starši zaznavajo, ko otrok zapusti dom. V raziskavi je sodelovalo več kvalitativnih in kvantitativnih raziskovalnih faz. V letu 1998 so izvedli kvantitativno telefonsko anketo, s pomočjo C.A.T.I. To je sistem, kjer uporabljajo vzorec 4.500 mladih ljudi, starih med 20 in 34 let, ki še vedno živijo doma. Raziskava je bila podprta s kvalitativno analizo pojava, ki temelji na štirih fokusnih skupinah razprave z mladimi v tej starostni skupini (od 20 do 34 let), ki še vedno živijo doma, in ki poteka v štirih mestih, ki se razlikujejo glede na geografsko lokacijo, kulturni kontekst in velikost v odnosu do vedenjskih vzorcev mladih. Mesta, kjer so izvajali raziskavo, so bila Rim, Brindisi, Neapelj in Treviso. Poleg tega, glede na pomen razširitve področja opazovanja, je bila druga, kvantitativna raziskava, na enak način izvedena s 1.000 starši otrok, anketiranih v prvi raziskavi, da bi opredelili morebitno "krivdo", ki pade na starše v zvezi z njihovimi otroci, da bi ti ne ostali doma, in glede njihove motivacije, pričakovanj in na splošno njihovih izkušenj v okviru družinskega življenja. V tem primeru pa je bila telefonska anketa podprta z uporabo kvalitativne metode ciljnim skupinam.<sup>49</sup>

## 2.2. Združene države Amerike

V članku z naslovom »For First Time in 130 Years, More Young Adults Live With Parents Than With Partners«<sup>50</sup>, ki je bil objavljen na internetni strani »The two-way«, avtorja Camile Domonoske, je objavljeno, da je analiza, ki jo je opravil Pew Research Center, pokazala, da se je po več kot sto tridesetih letih prvič zgodilo, da izredno veliko mladih in njihovih družin v starosti od 18 do 34 let živi pri starših. V tej starostni skupini živi 32,1 odstotka ljudi, ki živijo v hiši svojih staršev, medtem ko jih 31,6 odstotka živi v hiši svojih staršev z zakoncem ali partnerjem. Le 14 odstotkov jih živi v tem starostnem obdobju samih. Center Pew ugotavlja, da ne gre za rekordno visok odstotek mladih, ki živijo doma, saj je leta 1940 približno 35 odstotkov ljudi v tej starostni skupini tudi živelo doma, pri svojih starših ali starih starših. Vendar pa poudarjajo, da je bilo v tistih časih to celo zaželeno. 35 odstotkov ameriških fantov v starosti od 18 do 34 let živi pri starših (živijo sami) in 38 odstotkov z zakoncem ali partnerjem. Pri Američankah jih 35 odstotkov živi pri starših z zakoncem ali partnerjem in 29 odstotkov Američank v tej starostni skupini živi samih (brez partnerja) pri starših. Odstotek v razmerju moški – ženske je ravno obraten. V nadaljevanju je raziskava pokazala, da manj izobraženi mladi odrasli pogosteje živijo doma pri starših; Pew tudi ugotavlja, da so mladi odrasli temne polti v primerjavi belo raso danes že v enakem oziroma zelo podobnem položaju. Splošni demografski trend je enak za vse skupine mladih. Pew primerja tudi mlade Američane, ki živijo s svojimi starši, z mladimi ljudmi enake starostne skupine, ki živijo v Makedoniji. Ugotavljajo, da v Makedoniji več kot 70 odstotkov mladih odraslih v starostni skupini od 18 do 34 let živi doma, s starši. Pew tudi ugotavlja, da se je povečanje števila mladih odraslih Američanov, ki živijo doma pri starših, začelo veliko pred gospodarsko krizo in da je k takšnemu načinu življenja prispevala predvsem brezposelnost moških, ki je bila v porastu že desetletja poprej, ter tudi nizke plače, ki upadajo že od leta 1970. Na splošno študije kažejo, kako so se v Ameriki življenjske razmere mladih med 18. in 34. letom spremenile oziroma kako drugačen položaj je kot leta 1880, ko so se prvič začeli zbirati tovrstni podatki.

V članku Warrena Clarka naslovom »Delayed transitions of young adults«<sup>51</sup> je zaslediti, da je v letu 1971 kar tri četrtine 22-letnikov pustilo šolo, skoraj polovica se je poročila in vsak 4. mladostnik je postal starš. Veliko nasprotje letu 1971 je bilo leto 2001, kjer je polovica 22-letnikov še hodila v šolo, le vsak 5. izmed njih je bil v zvezi in vsaki 11. je postal starš. V letu 2001 so mlade ženske vodile mlade moške na področju izobrazbe, izredno veliko žensk pa je imelo tudi polno zaposlitev, kar je bistveno boljše stanje kot pred 30 leti. Na splošno je dandanes prehod v adolescenco poznejši in traja veliko dlje.

<sup>49</sup> A. Menniti, M. Misiti in M. Saviolli, Italian "Staaay at home" children: Attitudes and Constraints, 1998, str. 99.

<sup>50</sup> Domonoske C., 2016 (e-vir)

<sup>51</sup> Clark W., 2014 (e-vir)

V današnjem času mladi odrasli potrebujejo veliko več časa, da dosežejo neodvisnost, to pa posledično pomeni, da šolanje zaključujejo pozneje, živijo dlje časa pri starših ali starih starših, pozneje se vključijo tudi na trg delovne sile in vstopijo v zakonski stan in starševstvo. Večina mladostnikov in mladih odraslih med 18. in 34. letom starosti je prešlo v obdobje odraslosti veliko pozneje kot njihova generacija pred 30 leti. V kolikor primerjamo ženske pri 34 letih v današnjem času, se ne razlikujejo prav veliko od žensk iste starosti v letu 1971. Verjetnost, da je ta ženska zaposlena, pa je danes večja, vendar je viden porast tudi v odlašanju z otroki/družino. Nasprotno pa je pri moških, ki danes naredijo prehod v samostojnost šele pri 34 letih, medtem ko so pred 30 leti ta prehod naredili že mnogo prej. Na to vplivajo ekonomske spremembe in hitro spreminjajoče se razmere na trgu dela. Avtor članka tudi pravi, da ima manj mladih moških službo s polnim delovnim časom kot njihovi očetje pred 30 leti. Oboji, ženske in moški, danes stremijo k višji stopnji izobrazbe z upanjem, da ta pripomore k večji in boljši zaposljivosti, s tem pa se prehod v odraslost in samostojnost preloži na poznejše obdobje.

### 2.3. Srbija

V službenem glasniku z naslovom »Mladi v Srbiji 2015«<sup>52</sup> avtorjev Smilja Tomanovića in Dragana Stanojevića lahko uvidimo, da Srbija v 90-ih letih zaradi strukturnih omejitev in velikih globalnih družbenih sprememb na trgu dela in državne politike doseže višek preložitve odraščanja oziroma transformacije iz mladostnika v odraslo osebo. Blagostanje države, kriza držav in sam proces integracije so bistveno vplivali na življenje mladih. Podaljšana puberteta se iz poznih 20. let premakne v zgodnja 30. leta, pokazatelji le-te pa so poznejše sklepanje zakonov, zamaknjena odselitev od doma, nizka stopnja rojstev, poznejši vstop na trg zaposlitve. Spremembe v družbi postavljajo vprašanje vloge in mesta mladih v njej. Prehod iz mladosti v odraslost je tema, ki je najbolj razširjena v okviru interdisciplinarnega polja in prikazuje omenjeni proces skozi študije življenjskega toka. Posameznik v tranziciji sprejema odločitve na osnovi institucionalnih uredb, ki se jih opazuje na treh ravneh in sicer v zgodovinskem, institucionalnem in individualnem času. Avtorica članka omeni dve smeri preučevanja, pri kateri je prva smer usmerjena v razvoj življenjskega toka (prehod, faze, dogodki), druga smer pa raziskuje razvoj življenjskega toka v smislu sledenja razlikam med življenjskimi potmi v istih fazah življenjskega toka, a z drugimi dejavniki. Življenjski tok predstavlja družbeno opredeljene dogodke, kot so kompleksna menjava statusa v določenem obdobju (izobraževanje, družina, prva zaposlitev, nakup nepremičnine) in vlogo, ki jo prevzame posameznik skozi čas. Sestavni del raziskovanja prehoda iz mladosti v odraslost predstavlja prav osebni pogled na opredelitev strukture življenjskega toka. Politični vpliv v povezavi z javnopolitičnim mnenjem predstavlja neločljiv del socialne in izobraževalne politike. Prehod se dojema kot med faza in ima svojo dinamiko. Šele ko prehod dojamemo kot posebno življenjsko fazo, katere glavno značilnost v odnosu do drugih faz predstavlja heterogenost, lahko pojasnimo odstopajoče oblike tranzicije, kot je, denimo, podaljšana adolescenca. Koncept življenja se je spremenil in se nanaša na individualno raven, brez struktur za vsakega posameznika. Življenjski slog je postal osebni projekt vsakega posameznika, saj se pojavljajo nove oblike skupnosti, ki se jih ne obravnava več kot življenjske oblike - partnerstvo in zveze brez porok, brez otrok, vračanje domov po predhodnem »odhodu od doma« (ločitev). Članek za razumevanje prehoda iz mladosti v odraslost navaja 3 teorije. Prva je kot splošni trend nekdanjih bogatejših držav, držav v razvoju in postsocialističnih držav izpostavljena teza o heterogenizaciji življenjskega toka. Druga teza temelji na strukturirani individualizaciji, ki poudarja, da se proces odvija vzdolž strukturno omejenih meja izobraževanja, socialnega statusa, in ki delno podpira tezo o heterogenosti življenjskega toka (individualno se oblikujejo kot socialno). Tretja teorija, ki ukinja segmentacijo razvoja faz in med faz, pa življenjski tok razume integrirano. Med ključne življenjske dogodke sodijo: poroka, odhod zaradi želje po izobrazbi, vstop na trg delovne sile. Prav zaradi oviranega pristopa mladih na trg dela, kot tudi strukturne spremembe na trgu dela, mlade silijo v začasne, negotove službe in honorarna dela. Standardni časovni okvir, od izobraževanja do prve zaposlitve, izgublja standardno obliko in postaja podaljšana oblika. Vse te prelomnice se nahajajo v sferi družinskega življenja, izobraževanja in službe. Sobivanje omenjenih elementov nam jasno pokaže, kako težko je dejansko ločiti in potegniti črto med odraslostjo in mladostjo. V procesu odločanja niso vse faze enako pomembne, saj je vrstni red lahko zamenljiv, časovni razpon pa različno strukturiran. Vpliv strukturnih dejavnikov, kot je problem odseljavanja, je povezan z bivalno problematiko. 63 odstotkov mladih še vedno živi s svojimi starši. 32

<sup>52</sup> S. Tomanović in D. Stanojević, 2015. Mladi u Srbiji 2015: Stanja, opažanja, verovanja i nadanja.

odstotkov vprašanih se preživlja s svojimi dohodki, medtem ko 15 odstotkom pomagajo starši. Zaposlitveni kriterij merimo v stopnji brezposelnosti. Nižje izobraženi ljudje težko popravijo svoj družbeni položaj. Stabilne službe kljub visoki izobrazbi niso zagotovljene. Kljub dolgemu časovnemu obdobju izobraževanja le-to pomeni višjo stopnjo izobrazbe in pozneje boljšo kakovost delovnega mesta. Zaradi visoke stopnje brezposelnosti so mladi prisiljeni sprejeti delo, ne glede na svojo izobrazbo. To vodi v deprofesionalizacijo, kar pomeni, da sprejmejo vsako delo, ne glede na njihovo primarno poklicno usmerjenost. Mladi imajo občutek, da država ne naredi dovolj za razvitost in dostop do trga dela, poleg tega tudi ne zaupajo v institucije sistema. V Srbiji brezposelnost prizadeva kar polovico vseh mladih in je tako primerljiva le s Poljsko, katere brezposelnost je znašala kar 43 odstotkov. V ostalih evropskih državah, kot so Turčija, Španija, Italija, je stopnja brezposelnih znašala od 14.6 do 20 odstotkov.

Kot širšo demografsko spremembo avtorica članka izpostavlja družinsko tranzicijo. Sklepanje zakonov in starševstvo se premika navzgor. Mladi so danes zaradi ekonomskih, socialnih in drugih sprememb bolj usmerjeni k različnim vrstam pomoči in podpore svojih staršev. Med njimi je prisoten tudi recipročen odnos. Hkrati na neodvisnost mladih zelo vpliva izobrazba staršev in njihov finančni položaj. To pomeni, da je življenje s starši povezano s prihodki celotnega gospodinjstva, kjer je dojemanje materialnega stanja slabše in kjer se stanovanjska neodvisnost pokaže prav v primerjavi s finančno neodvisnostjo. Zaradi velikih sprememb v državi na vseh področjih je imel vpliv na generacijo v starosti 34 in 35 let prav ekonomski in politični sistem v državi. Izpostavljeni so 4 dejavniki: finance, stanovanje, služba in družina. Veliko jih je bilo brezposelnih in ti so bili še vedno finančno in bivalno odvisni od svojih staršev. V Srbiji se je osamosvojitve odvijala zelo počasi in je trajala do sredine 30. let. Srbijo v tem primeru lahko primerjamo z državami, kot so Italija, Španija in Grčija. Britanci in Danci se v primerjavi s Srbi odselijo celo desetletje prej. Posebnost generacije 34–35 let je v tem, da se kljub osamosvojitvi nikoli ne počutijo zares osamosvojene, kljub svoji družini in svojo streho nad glavo. Mladi na vasi pogosteje živijo s svojimi starši kot mladi v mestih, z ozirom na dominantni patriarhalni odnos. Dejansko moramo za kvalitativno analizo primerjati vse dejavnike, saj klasični model popolnega ogleda ne omogoča, prav zaradi pomembnosti tega individualnega pristopa, želje posameznika in njegove zmožnosti ter procesa življenjskega toka. Mladim se ne mudi odrasti, je pa njihova tranzicija močno povezana z državnimi viri in opiranjem na družino.

## **2.4. Japonska**

Odhod od doma je ključnega pomena v prehodu v odraslost, pa vendar je ta tema v povojnem obdobju Japonske slabo in premalo raziskana. Največkrat je odhod od doma povezan z odnosi med starši in otroci, z možnostjo izobraževanja in šolanja, z zaposlitvijo in dostopa do trga dela, finančnimi zmožnostmi za ustanovitev lastnega gospodinjstva in z osamosvojitvijo mladih. Največkrat je le-ta pomenila začetek ali pa dokončno neodvisnost od staršev. Poleg naštetih determinant na odhod in prehod v adolescenco vplivajo tudi državna blaginja, družinski sistem, odnos države ali politik držav do mladih in možnosti, ki jim jih le-ta ponuja. Prehod v obdobje odraslosti največkrat pomeni in povzroči finančno neodvisnost od staršev in pretrganje čustvenih vezi med njimi. Za razliko od Japonske se mladi v državah, kot so Nemčija, Avstrija in Severna Amerika, hitro odločajo za ta prehod in osamosvojitve, saj jih žene želja po neodvisnosti, medtem ko v državah, kot so Italija, Španija in Grčija, te želje po neodvisnosti ni zaznati, saj svoje bivanje pri starših odlagajo precej dolgo in jih celo primerjajo s psihološkim neuspehom. Veliko vlogo igrajo tudi družinske vezi, ki so zelo močne v državah Zahodne Evrope, medtem ko so v severni Ameriki zelo šibke. Japonska v drugi polovici 20. stoletja doživi visoko raven industrializacije, s tem pa tudi visok življenjski standard, ki vpliva tako na socialno-ekonomsko področje kot tudi na demografsko. Industrializacija pomeni tudi odmiranje agrikulture in industrije. V drugih industrializiranih državah so se mladi kljub nezanesljivosti služb odločali za nadaljevanje šolanja, več samskih žensk je sklepalo polno delovno razmerje, kar je pomenilo, da so se poročale pozneje in manj. Do leta 1950 oziroma do začetka leta 1960 je bil odhod od doma največkrat povezan s poroko, po teh letih pa je odhod povezan z iskanjem zaposlitve, izobraževanjem, pojavijo pa se tudi drugačni fenomeni življenja na svojem, in sicer v povezavi z intimnim partnerjem in sostanovalci, saj se življenjski stroški tako precej zmanjšajo. Deljenje sob, skupinsko življenje in skupno življenje s še nekom je pogostejši pojavi v zahodnih državah, nikakor pa nima nič skupnega z japonsko kulturo. Takšen model je bil izrazito prisoten v skandinavskih državah in Veliki Britaniji. Japonci so močno

vezani na svoj jezik. Hkrati je japonščina eden tistih jezikov, ki se močno istoveti z državo in s kulturo. To se vidi tudi pri samem jeziku - Japonci zelo slabo govorijo angleško, kar je še dodaten dokaz, da prisegajo na svojo kulturo in svoj jezik. Hkrati so narod obredov. Vestno opravljajo svoje delo in redko odstopajo od že uveljavljenih postopkov. Pravila so zato, da se jih spoštuje. Kakršnakoli prilagajanja so bolj izjeme kot pravilo; to namreč pomeni, da bi bilo treba zaobiti določena pravila, na to pa Japonci ne prisegajo. Seveda ne pomeni, da so povsem uokvirjeni, je pa bistvena razlika med našim in njihovim načinom življenja. Včasih je bilo tako, da so se mladi takoj po zaključeni fakulteti zaposlili. Prošnje za delo so pošiljali že v zadnjem letu študija, tako da so imeli službo zagotovljeno še pred samo diplomom. Sočasno z novo službo so si začeli ustvarjati družine, odseljevati pa se niso vedno začeli takoj, saj to ni bilo vedno mogoče in se pravzaprav tudi ni dogajalo pogosto. Pomembno vlogo pri odhodu od doma na Japonskem imata tudi religija in zgodovina. Tradicionalen način bivanja je, da v hiši živijo 3 generacije - otroci, starši in stari starši. To je še relativno ohranjeno, je pa res, da se danes pojavljajo tudi enogeneracijske hiše, kjer živijo le stari starši ali pa samski moški ali ženske. Ponekod se najdejo tudi dvogeneracijska bivališča - torej takšna, v katerih živijo otroci in starši, vendar pa se večgeneracijski način bivanja kljub vsemu še najbolj ohranja. Enega izmed močnejših faktorjev odhoda od doma predstavlja poroka. Ženske največkrat živijo s svojimi starši vse do poroke, kar še dviguje stopnjo prehoda v adolescenco in katere dokaz je tudi nizka stopnja rodnosti. Moški imajo močno željo po odselitvi že pred poroko in to se pogosto zgodi zaradi šolanja ali službe, kjer je starostna meja tudi nižja, medtem ko ženske celotno samsko obdobje povečini preživijo doma. Raziskave kažejo, da je življenje s starši na Japonskem drastično naraslo v zadnjih desetletjih. Stopnja neporočenih moških, starih od 30 do 40 let, je med letoma 1970 in 2000 z 11,6 odstotka poskočila na 42,9 odstotka. Japonska ima veliko skupnega z državami Južne Evrope na področju oblikovanja družine in oblikovanja lastnega gospodinjstva. Japonci dajo ogromno na ime podjetja - v kolikor želijo ugled, seveda iščejo delo pri najuglednejših podjetjih in to začnejo že z izbiro izobraževalne ustanove. Elitna izobrazba namreč prinese elitno službo. Danes je seveda malo drugače, vendar dajo še vedno velik poudarek na to. Na Japonskem naj bi še vedno veljal anahronistični družinski model, v katerem moški služi, žena pa ostaja doma, vendar po 20 letih gospodarskega mirovanja Japonska doživlja velik družbeni preporod. Ker so delovna mesta nestabilna in službe niso zagotovljene, so moški na Japonskem postali manj karierno ambiciozni in tudi manj finančno podkovani. Ženske dosegajo visoko stopnjo izobrazbe, vendar pa se na koncu odločijo ali za kariero ali pa za otroka, ki v 70 odstotkih primerov pomeni nezmožnost napredovanja na delovnem mestu in preostanek življenja doma, kot mama in gospodinja. Mladi na Japonskem ne hitijo v odraslost, saj so cene nepremičnin izredno visoke, kar je še dodaten razlog za ostajanje doma pri starših. Za Japonce to ni nekaj neobičajnega, saj pod eno streho lahko in ponavadi tudi živi kar nekaj generacij. Socialno-ekonomski status staršev vpliva na odhod od doma. Če je oče visoko izobražen, zaposlen na visokem položaju, gre moški/sin načeloma prej od doma, se začne izobraževati in iskati dobro zaposlitev, medtem ko za ženske /hčerke velja ravno obratno. Ko omenjamo stres, moramo omeniti tudi partnerski odnos med možem in ženo, ki velikokrat oziroma na Japonskem kar v večini primerov pomeni posledično tudi ločitev. Stopnja le-teh je na Japonskem zelo visoka, tako kot v Franciji, Nemčiji, na Švedskem, vendar še vedno manjša kot v Ameriki. Iz tega lahko razberemo, da načelom otroci iz ekonomsko in socialno stabilnejših družin pozneje zapustijo domove. Samski stan je včasih pomenil poraz na zasebnem področju, sedaj pa to ni nič neobičajnega, kot navaja avtor članka Zakaj so Japonci opustili spolne odnose? Trdi celo, da je samski stan postal nova resničnost. V povojnem obdobju Japonske na odhod od doma vplivajo tako socialne in ekonomske kot tudi demografske spremembe. Vse te močno vplivajo na to, kdaj se mladi odločijo ali pa so prisiljeni vstopiti v obdobje odraslosti. Velikokrat je v to odločitev vključen tudi faktor bratov ali sester. Načeloma je tako, da najstarejši ostane doma in prevzame skrb družino.<sup>53</sup>

## 2.5. Slovenija

Slovenska mladina se precej pozno odloča za odselitev od staršev in ustvarjanje svojega doma, a razmere se dandanes že izboljšujejo. »V Evropi se za ta korak najtežje odločijo Hrvati in Slovaki,« je v članku z naslovom Slovenci hitreje zapuščajo hotel mama zapisal David Kos. Avtor pravi, da Slovenci nismo več v samem vrhu držav Evropske unije oziroma nismo več na 2. mestu, kjer smo bili še leta 2008, po raziskavah Eurostata. Razmere se v zadnjih letih vidno izboljšujejo. Če je delež

<sup>53</sup> K. S., 2013 (e-vir)

mladih do leta 2009 naraščal – še pred šestimi leti je dobra polovica mladih živela pri starših, ta v zadnjem obdobju pada. Leta 2013 je padel na 43 odstotkov, povprečje vseh evropskih držav pa znaša 29 odstotkov. Tako je Slovenija pristala na 11. mestu. Iz omenjenega članka je mogoče razbrati, da življenje v »hotelu mama«, ki je cenejše in udobnejše za mlade (perilo je oprano in zlikano, kosilo skuhano, stanovanje pospravljeno) najbolj izkoriščajo mladi na Hrvaškem (kar 58,9 odstotka) in Slovaškem (57,1 odstotka). Sledijo jim Grki (52,6 odstotka), Bolgari (50,5 odstotka), Italijani (49,9 odstotka), Madžari (47,6 odstotka), Romuni (46,2 odstotka), Portugalci (45 odstotkov), Maltežani (44,7 odstotka) in Poljaki (43,5 odstotka). Slovenija je s 43 odstotki mladih, ki si ne morejo privoščiti lastnega stanovanja, na 11. mestu med 28 članicami EU. Nestabilne razmere na trgu dela in s tem povezane težave pri nakupu ali najemu stanovanja še vedno razmeroma dragih nepremičnin še vedno predstavljajo veliko oviro, zato mladi podaljšujejo sobivanje s starši. Da pa gre tudi za življenjske navade, potrjuje podatek, da visoke stopnje brezposelnosti mladih v posameznih državah niso nujno povezane s tem pojavom. Z izboljšanjem ekonomskega stanja verjetno lahko pričakujemo še malenkostno znižanje deleža mladih, živečih doma, bistvenega napredka pa zaenkrat ni pričakovati. Delež mladih, ki še vedno živijo pri starših, se je v zadnjih petih letih najbolj povečal na Madžarskem (+9,2 odstotne točke), Malti in v Romuniji. Največ mladih se je osamosvojilo prav v Sloveniji (–7 odstotnih točk), Latviji in Estoniji. Pred desetletjem je, na primer, doma živelo relativno več Slovencev (49,6 odstotka) kot Italijanov (45,2 odstotka), danes pa je razmerje ravno obrnjeno. Vsekakor pa je potrebno omeniti, da je v Italiji stopnja brezposelnosti med mladimi skoraj dvakrat višja kot v Sloveniji, zato je težava na trgu dela bistveno večja. Hkrati je Italija v jedru tako imenovanega sredozemskega modela odseljevanja od doma, kjer družina tradicionalno naredi praktično vse, da mladi ne bi bili pahnjeni v revščino. Slovenci v povprečju v domu svojih staršev ostajajo nekje do 29. leta, kar je enaka starost kot pri mladih v Grčiji in Romuniji. Hrvaška je s povprečjem 32,7 leta najvišje uvrščena na lestvici.

Članek, ki je bil objavljen na portalu »Viva« z naslovom »Kdo so mladci, ki še vedno živijo pri starših?« avtorice Neže Žigon, dodobra opisuje lagodno življenje mladih in njihovih družin doma - pri enem od staršev ali pri starih starših. Predstavljena je oseba, ki jo imenujemo Peter, ki na vprašanje, zakaj pri 27 letih še vedno biva doma, hitro odgovori, da je bivanje doma brezplačno, da ima hrano, ki jo skuha najboljša kuharica (mama), da lahko gleda kabelsko televizijo in da mu ni treba skrbeti za perilo; pravzaprav bi bil zmešan, v kolikor bi želel živeti drugje. Peter povzema stališče mnogih mladih. Včasih je podaljšano bivanje pri starših dobro za posameznike, ki se morajo postaviti na noge. Dobro dene. Starši pa so na začetku celo veseli, da lahko mladostnika še nekaj časa »zadržijo« pri sebi. Predvsem starši računajo na to, da si bo otrok tako lahko prihranil dovolj denarja, da se pozneje osamosvoji. Pravzaprav jim namesto da bi jih vrgli skozi vrata, nudijo še nekaj dodatnih let, da se počasi navadijo na odraslo dobo in naraščajočo samostojnost. Pravzaprav je to lahko zelo dobra izkušnja, za obe strani, v kolikor so otroci pripravljeni spoštovati osnovna pravila, ki jih postavijo starši. Vsekakor pa to ni vedno najboljša rešitev, saj nekateri ne ostanejo doma zato, da bi se navadili novih odgovornosti, ampak gostoljubnost staršev izrabljajo, da se izognejo odgovornosti.

Rok Pikon je v članku, ki je bil objavljen v časopisu Finance z naslovom »Skoraj vsak drugi Slovenec do 35. leta še živi pri starših«<sup>54</sup> opisal krizo v jugovzhodni Evropi, ki se poleg močnega vpliva na denarnice vse bolj jasno kaže tudi na demografiji. Vedno več je mladih, ki pred 35. letom nočejo zapustiti doma svojih staršev. »V Sloveniji je takšnih kar 44,1 odstotka,« kaže poročilo Eurostata in Evropske komisije. Tako je povprečna starost, ko v Sloveniji mladi zapustijo starše oziroma se odselijo, od 28 do 31 let. Skoraj polovica mladih ostaja s starši, ker si življenja na svojem ne morejo privoščiti. Pikon poudarja, da je še slabše na Slovaškem, kjer je mladih, ki ne zapustijo domačega gnezda, več kot 56 odstotkov.

Slovenija se uvršča v sam vrh evropskih držav glede podaljšanega sobivanja staršev in njihovih otrok oziroma mladih družin. Največja raziskava European Labour Force Survey (2007) je Slovenijo uvrstila na 2. mesto v Evropi, in sicer takoj za Slovaško. Zanimivo je tudi, da je naša sosedna Italija, ki je izredno znana po podaljšanem (so)bivanju mladih družin s starši, na lestvici za Slovenijo. Po

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<sup>54</sup> R. Pikon, 2013 (e-vir)

podatkih raziskave European Labour Force v povprečju ženske zapustijo dom svojih staršev pri starosti 29 let in pol, moški pa dve leti pozneje, pri starosti 31 let in pol. Gospodarske, socialne, kulturne, politične in demografske spremembe bistveno vplivajo na tradicionalno družino, družbene, strukturne in medgeneracijske odnose. Navedeno se kaže tudi v čedalje bolj aktualnem problemu skupnega gospodinjstva oziroma podaljšanega sobivanja mladih družin in staršev. Problem je zato vse pogostejše tudi tematiziran, tako na politični kot raziskovalni ravni. Kdaj bo prišlo do odselitve ter v kakšno stanovanje in življenjsko ureditev bo ta vodila, je odvisno od mnogih osebnih in družbenih okoliščin. Ti dejavniki so po eni strani individualni in segajo na mikro raven, kjer so ključnega pomena posameznikove želje, izbire in viri; po drugi strani so ti elementi strukturni in na makro ravni določajo množico priložnosti in ovir, s katerimi se posamezniki soočajo pri svojih izbirah v nekem okolju. Strukturni dejavniki so značilnosti okolja in pojasnjujejo, zakaj posamezniki v isti družbi sledijo podobnim vzorcem odhoda od doma in zakaj se ti vzorci med državami razlikujejo. Mladi sestavljajo spreminjajočo se skupino, ki bo stopila na trg delovne sile in si nekoč ustvarila družino.

Mladi nenehno prehajajo od učenja k delu in obratno, njihove individualne poti so bolj raznolike kot v preteklosti. Šola, univerza, delo ter družbeno okolje nimajo več enake, združujoče vloge kot včasih. Mladost traja dlje. Mladi vse pozneje postajajo samostojni. Sociološki, gospodarski in kulturni vidiki mladih so se bistveno spremenili zaradi demografskih sprememb in sprememb v družbenem okolju, individualnem in kolektivnem vedenju, družinskih odnosih in razmerah na trgu delovne sile. Demografi so ugotovili, da pod pritiskom gospodarskih (zaposljivosti, brezposelnosti in tako dalje) in družbeno-kulturnih dejavnikov mladi v povprečju kasneje dosežejo različne življenjske stopnje: konec formalnega izobraževanja, prva zaposlitev, ustvarjanje družine in tako dalje. Življenjske poti so vse manj premočrtne, saj družbe ne dajejo več enakih zagotovil (kot so varnost zaposlitve, prejemki in storitve socialne varnosti, na primer).

Tradicionalni kolektivni modeli izgubljajo veljavo, saj so osebne poti vedno bolj individualne.

### 3. Metode dela

Osnovna naloga metodologije kot teorije znanstvenega raziskovanja je logično-epistemološka kritika znanstvenih del, kar pomeni raziskovanje logične strukture zakonov, hipotez, teorij, znanstvenih dejstev, spoznanj, odkritij in drugo. Teoretični vidik zajema postopke zbiranja, opazovanja, urejanja, preizkušanja in točnega merjenja podatkov, ki zagotavljajo optimalne pogoje, pod katerimi se lahko pride do ustvarjalnih znanstvenih spoznanj. Pri izdelavi magistrskega dela bom uporabila različne raziskovalne metode. Izhodišče pri preučevanju predstavljene vsebine bo analiza dejavnikov, ki vplivajo na sobivanje mladih (družin) s starši.

Značilnosti znanstvenih spoznanj in posledično znanstvenih metod, s katerimi odkrivamo in raziskujemo, so natančnost, objektivnost, splošnost in zanesljivost. Samo raziskovalno delo je proces, ki je odvisen od znanja, emocionalnosti in volje raziskovalca.

Z metodo anketiranja bom zbrala podatke, informacije, stališča in mišljenja o predstavljeni vsebini. Hkrati bom opravila tudi intervju z mladimi, ki kljub svoji starosti še vedno živijo pri starših, in z mladimi, ki so se zgodaj odselili od staršev.

Metoda anketiranja spada med kvantitativne metode raziskovanja. Cilj kvantitativnega raziskovanja je priti do zanesljivih, točnih, preciznih, merljivih, preverljivih in objektivnih spoznanj. Načrt kvantitativne raziskave je potrebno dosledno spoštovati, oblikuje pa se ga na podlagi teoretičnih izhodišč in dosedanjih raziskav. Da bi dosegli najvišjo stopnjo objektivnosti, se v kvantitativnem raziskovanju uveljavlja zahteva po ločitvi raziskovalnega objekta in subjekta. Raziskovalnega procesa se moramo lotiti sistematično, da ne prezremo nobenega pomembnega koraka, ki bi nas lahko pripeljal do napačnega zaključka.<sup>55</sup> Metode kvantitativnega raziskovanja so telefonsko anketiranje, osebno anketiranje, spletno anketiranje, pošto anketiranje in anketiranje s pomočjo mobilne tehnologije. Sama sem uporabila osebno in spletno anketiranje. V anketni metodologiji lahko uporabimo mešani način ankete, ki označuje kombinacijo različnih vrst anket, kot so, na primer, telefonsko anketiranje, spletno anketiranje, osebno anketiranje, pisno anketiranje. Tako

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<sup>55</sup> B. Grum in A. Temeljotov Salaj, 2011, str. 100.

podatke pridobivamo na različne načine, ki pa niso vedno uporabni. Takrat lahko posežemo po specializiranem tipu vzorčenja, in sicer po principu snežne kepe. Pri tem načinu anketiranja se uporablja osebna poznanstva - vprašalnik se izpolni tako, da najprej zberemo poznan krog ljudi, znancev, ki bodo odgovorili nanj, potem pa ti znanci povabijo k reševanju še svoje znance in ti spet svoje znance. Po tem sistemu bi torej vsak naslednji anketiranec zagotovil nekaj novih anketirancev. Vendar pa prinaša takšno anketiranje tudi slabosti, saj hitro izgubimo nadzor nad začetnim vzorcem, dodatno slabost pa predstavlja tudi odvisnost od posameznikovega mreženja v horizontalni ter vertikalni smeri. Pri anketnem vprašalniku je izredno pomembno, kako le-tega sestavimo, saj z njim želimo pridobiti podatke, s katerimi bomo odgovorili na postavljene hipoteze. Prav tako je izredno pomembno, da so vprašanja postavljena jasno, sistematično in da se ne ponavljajo. Vprašalnik je lahko odprtega tipa, kjer odgovori niso podani, polodprtega tipa, kjer nekaj možnih odgovorov podamo in nekaj ne, in zaprtega tipa, kjer pri vsakem vprašanju navedemo tudi več možnih odgovorov, med katerimi anketiranci izbirajo.<sup>56</sup> Anketa pri odprtem tipu vprašalnika nam lahko prinese zelo malo uporabnih odgovorov, zato je tveganje toliko večje. Anketiranci danes najraje odgovarjajo na anketni vprašalnik zaprtega tipa.

Pri sestavi anketnega vprašalnika sem se iz praktičnih razlogov - da bi dobila čim več zaključenih anketnih vprašalnikov, odločila za zaprti tip vprašalnika, kjer sem pri vsakem vprašanju nanizala več možnih odgovorov, med katerimi so anketiranci izbirali. Pri sestavi anketnega vprašalnika sem izhajala iz predpostavke, da je današnji problem odseljevanja mladih in mladih družin od staršev v največji meri povezan z demografskimi in strukturalnimi dejavniki. Zanima me, kateri so ključni dejavniki, ki vplivajo na odseljevanje mladih od doma. Te bom pridobila z anketo. Zanima me, kakšne rezultate so prinesle raziskave drugih. Glede na raziskave Andreje Cirman, ki pravi, da dosegljivost stanovanj ni problematična zgolj pri obremenitvi dohodka s stanovanjskimi stroški, ampak tudi pri dosegljivosti stanovanj glede na financiranje lastniškega stanovanja,<sup>57</sup> sem v anketi zastavila tudi takšno vprašanje, da bi pridobila čim bolj realno sliko današnjega stanja.

#### **4. Analiza anketnega vprašalnika**

Danes vse več mladih pozno odhaja od doma, od staršev, iz varnega otroškega zavetja, in tako zelo dolgo izkoriščajo tako imenovani »hotel mama«. Z anketnim vprašalnikom sem raziskala, koliko mladih v Sloveniji je pravzaprav takšnih, ki se odločajo za samostojno življenje in kakšni so njihovi glavni vzroki.

Anketni vprašalnik je bil sestavljen za širše prebivalstvo. Predvsem sem želela zajeti mlade do 35 let, na katere se tematika pravzaprav navezuje. Nekaj jih je bilo sicer starih nad 35 let, vendar pa je mladost zelo širok (in relativen) pojem.

Anketa zajema vprašanja, povezana z mladimi, njihovim pogledom na stanovanjsko problematiko, razlogi za poznejšo selitev od staršev in vrednote, ki se vidno spreminjajo iz generacije v generacijo. Anketni vprašalnik je bil sestavljen z namenom, da si pridobim sliko, kako mladi razmišljajo, zakaj se odločajo za poznejšo selitev, podaljšano izobraževanje, biti samski in se ne vezati; kaj je zanje pomembno in kaj manj pomembno pri selitvi od staršev; kakšne ugodnosti imajo doma, ali jim odcepitev od staršev predstavlja problem, tako na čustveni kot na fizični ravni.

Anketni vprašalnik sem objavila na socialnem omrežju. Nekaj sem jih posredovala tudi prek elektronske pošte osebam, za katere sem vedela, da spadajo v okvir raziskovalne ankete, da bi mi rezultati prinesli čim bolj realno sliko. Anketo sem izvajala tri dni, nato sem jo zaprla in začela z analizo. Odziv na izpolnjevanje ankete je bil izredno dober.

Na podlagi uspešno izpolnjenih vprašalnikov me je za nadaljnjo analizo zanimala predvsem anketna skupina v starosti od 21 do 25 let in od 26 do 30 let, saj ta del prebivalstva predstavlja mlade (družine). Anketni vprašalnik sem objavila na družbenih omrežjih, nekatere pa sem pozvala na

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<sup>56</sup> B. Grum in A. Temeljotov Salaj, 2011, str. 101-102.

<sup>57</sup> B. Grum in A. Temeljotov Salaj, 2011, str. 109, po Cirman Andreja, 2007.

izpolnitev ankete tudi po elektronski pošti, ker sem menila, da spadajo v to ciljno starostno skupino. V skupini od 21 do 25 let je anketni vprašalnik izpolnilo 13 anketirancev, kar predstavlja dobrih 13 odstotkov, v skupini od 26 do 30 let pa 41 oseb, kar predstavlja dobrih 40 odstotkov anketirancev. Vprašalnik je izpolnilo 18 moških in 83 žensk. Morda s tem ženske pokažemo večje zanimanje za izpolnjevanje anket, ali se nam morda »bolj ljubi« ali pa imamo celo več časa. Na področju izobraževanja sem dobila podatek, da ima kar 55 anketirancev dokončano fakulteto oziroma dodiplomski študij in 6 anketirancev magisterij, kar pomeni, da jih ima kar 60 odstotkov visoko ali višjo izobrazbo. 38 anketirancev je zaključilo srednjo šolo, 2 anketirancev pa osnovno šolo ali manj. Stopnja izobrazbe anketiranih oseb je torej povečini zelo visoka. 49 anketirancev je poročenih ali živi v izvenzakonski skupnosti, ki jo danes enačimo z zakonsko skupnostjo, 30 anketirancev je v partnerski zvezi in le 22 anketirancev živi samsko življenje. Če ta podatek pogledamo v odstotkih, lahko rečemo, da je le slabih 22 odstotkov anketirancev samskih. Zanimiv je podatek, da več kot polovica anketirancev živi v hiši, kar 54 odstotkov, vendar pa jih le 12 odstotkov živi s starši. Od vseh vprašanih oseb jih je 71 anketirancev zaposlenih, kar predstavlja 70 odstotkov vseh anketirancev. Odstotek nezaposlenih je majhen, saj je le 17 anketirancev označilo, da so nezaposleni, kar predstavlja slabih 17 odstotkov. Število anketirancev, ki imajo otroke, je 64, kar predstavlja 63-odstotni delež vseh anketirancev.

Trend »hotel mama« naj bi v Sloveniji in po svetu zelo naraščal, kar pomeni, da vse več mladih in mladih družin živi podaljšano bivanje doma, pri svojih starših ali starih starših. Pri anketi me je zanimalo, kateri dejavnik bodo izpostavili kot najpomembnejši razlog za selitev od staršev. Odgovor, da je najpomembnejši razlog finančni položaj, me ni presenetil. Kot naslednji najpomembnejši razlog sledi problematika redne zaposlitve. Anketiranci so tudi izpostavili, da jim družina pomeni najpomembnejšo vrednoto v življenju, sledijo ji materialne dobrine, nobena od naštetih vrednot pa zanje ni bila nepomembna. Skozi anketo sem dobila tudi podatek, da je sicer zelo pomemben vzrok za poznejši odhod od doma pomanjkanje financ, vendar pa je kar 30 odstotkov anketirancev odgovorilo tudi, da jih je strah odgovornosti. Gre res za odgovornost ali zgolj za ohranjanje ugodja in svobodnega življenja? Glede na rezultate, ki sem jih dobila z anketo, menim, da nam je Slovencem še vedno najpomembnejše oziroma zelo pomembno, da imamo svoje lastno premoženje, s katerim si lahko privoščimo tudi lastniško stanovanje. Kar 91 odstotkov anketirancev si želi lastniško stanovanje in le 5% anketirancev nima te želje oziroma jim lastniško stanovanje ni tako zelo pomembno. Stanovanjski sklad RS je zaživel z namenom, da bi bilo življenje mladim oziroma mladim družinam lažje, vsaj kar se tiče najema ali nakupa stanovanja, vendar je iz ankete razvidno, da le 33 odstotkov anketirancev pozna sklad, kar pomeni, da niso izkoristili možnosti za mlade družine, saj so se o njej premalo ali pa se sploh niso pozanimali. Večina mladih meni, da so bila stanovanja pred osamosvojitvijo lažje dostopna. Tako meni kar 89 oseb, kar predstavlja 88 odstotkov anketirancev. Časi se spreminjajo, gospodarstvo se spreminja, politika se spreminja, demografske spremembe so na pohodu; želim povedati, da bi verjetno čez 20 let mladi rekli enako kot danes – včasih jim je bilo lažje.

Kdaj so se anketirane osebe odselile od doma oziroma od svojih staršev, je bilo eno mojih ključnih vprašanj. Od vseh vprašanih se jih je 20 odstotkov (20 oseb) odselilo med 18. in 20. letom, 28 odstotkov (28 oseb) se je od staršev odselilo med 26. in 30. letom, 38 odstotkov (38 oseb) se je odselilo med 21. in 25. letom, 1 anketiranec pa se je odselil od staršev po 35. letu starosti. 14 anketirancev še vedno živi doma s starši. Torej, v kolikor pogledamo skupini do 21 do 25 let in od 26 do 30 let (slednja je tudi moja ciljna skupina), se jih je v tem obdobju od doma odselilo kar 65 odstotkov. Kar 52 osebam se zdi najbolj pomembna redna zaposlitev pri odločanju o snovanju družine, vstopu v partnerski odnos in selitvi od staršev. V kolikor prištejemo še tiste, ki se jim zdi leta bolj pomembna, dobimo podatek, da je zaposlitev v kar 86 odstotkih izrednega pomena pri samostojnosti. Kar 57 odstotkov anketirancev meni, da je najboljši čas za mlade oziroma mlade družine, da se odselijo od staršev med 21. in 25. letom starosti, 36 odstotkov jih meni, da je selitev najboljša v obdobju od 26 do 30 let. Torej je moja ciljna skupina kar v 93 odstotkih najpomembnejša oziroma najprimernejša za odselitev od staršev. V nadaljevanju 48 odstotkov anketirancev meni, da odločilno vlogo pri odselitvi od staršev igra zaposlitev. Posledično ta zagotavlja finančno varnost in zmožnost plačevanja ali kredita ali najemnine. Tudi dostopnost stanovanj predstavlja odločilni dejavnik pri odselitvi, kar meni 43% odstotkov anketirancev. Izredno zanimiv pa je podatek, da



danes kar 79 odstotkov anketirancev meni, da so ta trenutek finančno sposobni selitve od staršev v najemniško stanovanje, kar 93 odstotkov anketirancev pa meni, da bi si stanovanje kupilo, v kolikor bi bila cenovno bolj dostopna.

Na podlagi rezultatov ankete lahko zaključim, da nepripravljenost na kompromise, strah pred odgovornostjo, pomanjkanje financ, osebni uspeh, stanovanjska problematika in želja po nadaljnjem izobraževanju spadajo v skupino bolj pomembnih dejavnikov pri pomembnejših odločitvah, kot so snovanje družine, vstopanje v partnersko zvezo, osamosvojitev in bivanje pri starših. Posledično ta zagotavlja finančno varnost in zmožnost plačevanja ali kredita ali najemnine.

## **5. Sklep**

Povsod obstajajo politični, kulturni, demografski, socialni, gospodarski dejavniki, ki vplivajo na potek življenja posameznika - od otroka, mladostnika do odraslega človeka in starostnika. Omenjeni dejavniki vplivajo na družbene strukture, na tisočletja stare vzorce, imenovane tradicija. Pravzaprav tradicionalne družine skorajda ni več. V današnjem času obstaja drugačna družina. Manjša družina, z otrokom ali brez, srednje velika družina z dvema otrokoma, partnerja, ki živita v izvenzakonski skupnosti, ali pa skupnost istospolnih partnerjev, družina, v kateri so skrbniki otrok dedki in babice ali tete in strici, družina, kjer sta mama ali oče samohranilca. Kakšno družino bomo ustvarili, je odvisno od nas samih, od naših osebnih ter tudi družbenih okoliščin.

Literatura, kot razlog za poznejšo selitev od staršev, navaja gospodarski položaj v državi, brezposelnost, nestabilne razmere na trgu dela ter s tem tudi težjo dostopnost do lastnega ali najemniškega stanovanja, cenovno nedostopnost stanovanj in podaljšano puberteta. Bivanje doma je namreč zelo udobno in brezplačno. Med vzroki so navedeni tudi daljše časovno obdobje izobraževanja, socialne norme, finančne zmožnosti, kulturni običaji, državna politika ter družinska tranzicija v smislu poznejšega vstopanja v razmerja in snovanja družine. Po preučeni literaturi vse bolj ugotavljam, da je Slovenija v samem vrhu glede podaljšanega sobivanja s starši in da se to sobivanje lahko zavleče vse do 35. leta starosti, v nekaterih primerih celo dlje.

Mladi ostajajo optimistični. Zavedajo se problematike, zato v nakup, najem ali selitev vstopajo premišljeno. Želja po bolj kakovostnem življenju, ki ga posameznik, na žalost, v sodobnem svetu lahko doseže samo z ustreznimi mesečnim prihodkom, jih pelje tudi čez mejo. Tukaj pa je na izgubi pravzaprav država. V Sloveniji opazam nizko politično participacijo mladih, saj menijo, da ne morejo storiti nič, da bi se stanje spremenilo, zato jih večina niti ne poskuša. V danem položaju vztrajajo, dokler lahko. Največkrat so najbolj prizadeti prav tisti, ki so že tako ali tako prikrajšani - nižji sloj, ranljive skupine. Dokler se v krizi ne znajde tudi srednji sloj, smo mladi varni, ker za nami stojijo starši, skrbniki, ki nas bodo vedno potiskali naprej in nas reševali. Včasih temu ni bilo tako. Mladi so si morali sami poiskati službo, se čim prej odseliti, si ustvariti družino, ne glede na to, kakšen je bil mesečni prihodek, ker je to zahteval tedanji način življenja in so to zapovedovale tedanje družbene vrednote. Finance so tiste, ki nam narekujejo, kako bomo živeli in kje bomo živeli. Družbeni položaj staršev je tisti, ki narekuje, kakšen položaj v družbi bomo imeli tudi mi. Menim, da smo mladi željni znanja in osvajanja ciljev, ki smo si jih zadali.

Dostopnost do stanovanj, kreditov in služb bi morala biti lažja in bolje upravljana s strani države. Vendar bi tudi mi, mladi, morali pokazati zanimanje za sooblikovanje družbenokritičnega pogleda na omenjeno problematiko. Pokazati bi morali večjo vztrajnost, se vključevati v dejavnosti države, saj je vključenost državljana ključnega pomena pri nastajanju novih reform, zakonov in politik. Ne samo tarnati, kako je težko in kazati na težave, potrebno je iskati rešitve, dajati predloge in se udeleževati z namenom doseganja zelenih ciljev.

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# Estimation of facilities construction cost using radial basis neural network

Valentina Zileska Pancovska

Silvana Petruseva

University “Ss. Cyril and Methodius”, Faculty of Civil Engineering, Republic of Macedonia

E-mail: valentinazp@gf.ukim.edu.mk

## Abstract

Achieved construction cost can affect the facilities project participants' business, so the decision what cost to sign in a contract for a new facility construction is a quite responsible decision. In addition, the process of facilities construction is influenced by numerous changeable factors which increase the complexity of the decision about the construction cost. Therefore, having a model for construction cost prediction is of particular interest. This paper proposes a model for facilities construction' cost prediction which can lead to construction cost estimation improvements during the construction contracting process. Data for sixty five facilities construction projects were used as input for the DTREG predictive software to develop a model for construction cost prediction. The data used were: real construction cost, contracted construction cost, real construction time and contracted construction time. The predictive model developed in this paper is a combination of process based and data driven model. The Bromilow' time-cost model was used as a process based model and the Radial basis function neural network (RBF NN) was used as a data driven model. The combination of these two models gave better prediction results than using only one of them. The model has the mean absolute percentage error (MAPE) of around 0.639%. The coefficient of the determination  $R^2$  for the model, which represents general fit of the model is around 99.21%, and the coefficient of correlation between the actual and the predicted cost is 0.996. The general conclusion is that historical data for construction cost are useful for developing models that predict construction cost. The model presented in this paper can be used for construction cost prediction and as an experience for developing other models.

**Keywords:** Construction cost, Facility, RBF neural network, DTREG software, Bromilow' time-cost model, Process based models, Data driven models

## 1. Introduction

Construction cost is included in each contract for facility construction and it is in interaction with other elements of facility project (Shr, Chen, 2006; Moura et al., 2007; Dimitrov, Zileska, 2015; Yousefi, et al., 2016). Inadequate cost estimation usually results in activities delays, disputes, construction time and cost overrun, etc. (González, 2014); Yousefi, et al., 2016; Vahdani et al., 2016). That leads to realized facility' projects worldwide which did not achieve the project' cost objectives (Skitmore, Ng, 2003; Moura et al., 2007; Olawale, Sun, 2010; Chin, Hamid, 2015; Vahdani et al., 2016). These situations usually have an impact on project participants' business, their portfolio and sometimes on their existence. Hence, cost became viewed as one of the key factors of each facility project and reaching the construction cost became a project participants' challenge (Chan, Chan, 2004; Zhang, Ng, 2012). Therefore, the estimation of construction cost with satisfactory accuracy is of great interest for all participants in facilities construction.

Cost depends on numerous factors that are timely changeable and influence each other. Acknowledging all of them during the processes of cost estimation and contracting is impossible, particularly in early project phases or when the fast estimation of cost is needed (Petruseva et al., 2016). Additionally, data about the similarly previous or current facilities projects' are not always available or useful. The reason is that facilities construction cost data in many cases are the firm sensitive/private data which are not public. Furthermore, the facility construction circumstances are different and specific for each facility. Therefore, the process of estimating the facility construction cost is characterized by high complexity. It is also a responsible and effortful process which needs time and cost (Petrovski et al., 2015).

In practice, besides the facilities documentation, cost estimators use facilities project participants' experiences about construction cost estimation, mathematical and statistical methods, their own intuition, etc. Also, there are software supports which can be used, but the cost estimation remains a complex and responsible process for each facilities construction firm. Thus, facilities construction cost and its estimation are among the issues that are examined by many authors worldwide and there are numerous papers that are worthy of attention (Attarzadeh, Ow, 2011; Ostojić-Škomrlj, Radujković, 2012; Chin, Hamid, 2015; Žujo et al., 2017). Ng et al. (2001) tested Bromilow's time-cost model. It was shown that different types of projects needed different parameter estimates and smaller industrial projects take less time to complete than smaller educational and residential projects. Two separate models were developed, one for industrial and one for non-industrial projects. Models' results were compared with previous works in order to indicate the extent of changes in the time-cost relationship over the last 40 years in Australian construction projects. A significant improvement in the construction speed is indicated over that period. Skitmore and Ng (2003) implemented regression analyses to develop models for forecasting construction cost and time. Models depend on available data for client sector, the method of contractor selection, project type, etc.

The functional relationship between construction cost and time for highways was explored by Shr and Chen (2006). The investigation result enables contractors to adjust construction cost and time for highways more flexibly, particularly in the bidding process. Using exponential function Žujo et al. (2017) analyzed the interdependence of cost and time of construction for water supply systems. Furthermore, using multiple regression techniques the study of Mahamid (2011) developed early cost estimating models for road construction projects. Bid quantities or road width and length were used as input variable. Ten regression models have been developed, 4 of them including bid quantities as independent variables and 6 of them including road length and width. The coefficient of determination  $R^2$  for these models was 0.92 to 0.98, indicating good relationship between dependent and independent variables and fitting with real-life data. The values of MAPE (mean absolute percentage error) ranged from 13% to 31%, indicating significant improvement over the past research with MAPE between 25% and 50%. The conclusion of this research is that the accuracy and reliability of an estimate is totally dependent upon definition of the project scope and preparation of the estimate and the estimated project cost is not an exact number but a probable value. For predicting construction cost and time Hammad et al. (2008) proposed a probabilistic model using statistical regression. Models were based on historical data of similar projects.

Three different approaches using s-curves and mathematical regression expressions were proposed by Ostojić-Škomrlj and Radujković (2012) giving methodological procedure for forecasting cost distribution over time. The methodology can be used for forecasting cash flow in all realization phases and particularly in the earliest phase for three types of structures: motorway, tunnel and building.

Neural networks (NNs) are also examined and applied as a support in cost estimation process. Günaydın and Doğan (2004) stress the importance of decision making in cost prediction for building design processes and the need for estimation tool for project managers and designers. Neural network methodology is investigated for overcoming cost estimation problems in the early phases of building design processes. Data from thirty projects have been used for training and testing the NN and predicting the square meter cost of reinforced concrete structural systems of 4–8 storey residential buildings. The accuracy of the average cost estimation that was achieved was 93%. Using artificial NN for residential buildings Yadav (2016) developed a model for forecasting the total structural cost. As input parameters he used cost of sand, aggregates, cement, steel, mason, contractor per square feet construction, skilled and not skilled worker. He used the software NEURO XL Version 2.1 for developing the ANN model. The model  $R^2$  coefficient was 0.9905 and the correlation factor for the model was 0.9960.

NN was also used by Shehab and Farook (2013) for construction cost estimation for sewer and water rehabilitation projects. They used 54 sewer and water rehabilitation projects to develop their NN predictive model with high accuracy. They used Pareto analysis technique to identify 23 most important factors that contribute positively to the cost estimation process. Acknowledging the above stated, the aim of this paper is to present a model for facility cost estimation as a support in the facilities construction decision process. Relatively new methodology combining process based and data driven model is used for forecasting the cost of construction and the result is significant improvement of the accuracy over the application of only one of these methods. Bromilow's time-cost model (Bromilow, 1969) is used as process based model, and RBF NN (radial basis neural network) is used as data driven model.

## 2. Research methodology

### 2.1. Sample

Data for construction cost and time, facility type and other relevant data for sixty five facilities construction projects were collected from construction firms. Facilities were built starting from 2010. Data were used as input for the DTREG predictive software.

### 2.2 Methods for data analysis – combination of process based and data driven models

The model proposed in this paper for predicting the cost of construction is combination of process based and data driven model, a relatively new area of research in the last several years.

Bromilow's time-cost model is used as process based model, and RBF NN (radial basis neural network) is used as data driven model. Implementation of the combination of these two models improved the accuracy of the prediction significantly in comparison with the accuracy when only the data driven model was applied.

Below these two models will be described in short.

## 3. Implementation of the process based model

The process based models have extensive range of application but developing the process based models assumes very good understanding of the process and also accurate and extensive data in order to produce the model (Gibs et al., 2006).

In this paper Bromilow's time cost model is used as process based model. It gives the relation between the time of construction and the price of construction (Eq. 1), (Bromilow, 1969).

$$T = a \cdot P^b \quad (1)$$

T is a planned (contracted) time and P is a planned (contracted) price. *a* and *b* are parameters which should be obtained by the available data. *a* expresses the average time for construction for a

monetary value and  $b$  expresses the dependency of the time of construction on the change of the price (Bromilow, 1969). This model has been verified and confirmed by many authors from many different countries around the world (Chan, 2001; Choundhury, Rajan, 2003; Car-Pusic, Radujkovic, 2009; Zujo et al., 2017). Bromilow's time-cost model has one limitation that the parameters of the model depend on the country where it is applied, due to specific economic characteristics of each country (Zujo et al., 2017).

Data collected for our investigation were: real time of construction, real price of construction, planned (contracted) time of construction, contracted price of construction, year of construction and type of facility. Only the following were chosen as most influential variables on the cost of construction: real time and price of construction and contracted time and price of construction. The basic idea for applying the Bromilow's model in our paper follows from the next several equations, where we apply this model for contracted time and price and real time and price of construction (eq. (2) and (3)) and after that the real price of construction is expressed from other variables ((4), (5), (6) and (7)):

$$T_1 = a_1 \cdot P_1^{b_1} \quad (2)$$

$$T_2 = a_2 \cdot P_2^{b_2} \quad (3)$$

$T_1$  is planned (contracted) time for construction and  $P_1$  is contracted construction price, and  $T_2$  and  $P_2$  are real construction time and real construction price, respectively.

These equations ((2) and (3)) are being logarithmised in order to receive linear equations (eq.4-5):

$$\ln(T_1) = \ln(a_1) + b_1 \ln(P_1) \quad (4)$$

$$\ln(T_2) = \ln(a_2) + b_2 \ln(P_2) \quad (5)$$

$P_2$  shall be expressed from (4) and (5), by their summing (eq.(6)):

$$\ln(T_1) + \ln(T_2) = \ln(a_1) + b_1 \ln(P_1) + \ln(a_2) + b_2 \ln(P_2) \quad (6)$$

Equation (7) is implemented in our predictive modeling, where  $\ln(P_2)$  is dependent linearly from  $\ln(T_1)$ ,  $\ln(T_2)$  and  $\ln(P_1)$ . So,  $\ln(P_2)$ ,  $\ln(T_1)$ ,  $\ln(T_2)$  and  $\ln(P_1)$  are used as input variables for our model, not the actual values of  $P_2$ ,  $T_1$ ,  $T_2$  and  $P_1$ .  $\ln(P_2)$  is chosen to be target (dependent) variable, and  $\ln(P_1)$ ,  $\ln(T_1)$  and  $\ln(T_2)$  are chosen as predictors (independent variables). They are input variables in the data driven model (RBF NN) used in this paper.

$$\ln(P_2) = \frac{1}{b_2} (\ln(T_1) + \ln(T_2) - \ln(a_1) - \ln(a_2) - b_1 \ln(P_1)) \quad (7)$$

Process based models are often given by mathematical equation, after which numerical solution of that equation should follow.

## Data-driven model

When the process based model can not be built because of lack of deep understanding of the process which is being considered, or when computing of the parameters in the process based model is difficult to obtain or it is not precise, data driven models (DDM) can be developed, when some of the variables which influence the process and which describe the input–output relationship of the process are measured and available. DDM do not require knowledge about the laws under which the variables which influence the process are connected, and also they do not need deep understanding about the process. The only requirement is the knowledge about the most representative variables influencing the process and enough quantity of their measured values. Then DDM can extract valuable information about the relationship of the variables included in the process, and can predict some of them chosen as target (dependent) variable. The other variables which are used for predicting the target variable are called predictors (or independent variables).

The abilities of the empirical DDM are being widened very much in the last several years by the recent investigations in artificial intelligence, such as machine learning and computational intelligence, making them appropriate for replacing or complementing the process based models.

Recent developments of the soft computing, intelligent data analysis or data mining have also contributed very much for improving the DDM. In the last years the research of artificial intelligence modeling contributed also for generating new and better process based models from empirical data (Manhart, 2007). When there is not enough data for training DDM, or when the parameters of the process based model are difficult to obtain, then using hybrid modeling which is combination of DDM and process based model (PBM) can be applied. This is relatively new research area which has given significant results in the last several years. Corzo et al. (2009) have obtained improvement of the accuracy of the model increasing its efficiency, by using combination of PBM and DDM in hydrology at river flow simulation. Radial basis function neural network (RBF NN) is used in our paper as data driven model. First, neural networks (NN) as computational tools shall be described in short and after that RBF NN.

### Neural networks as computational methods

Neural networks (NNs) have become very popular for data analysis in the last 3 decades, making significant contribution to the different fields of investigation. NNs are computing models simulating the biological structure of the human brain. The direction of research in artificial intelligence that works with the concept of artificial neural networks as a micro structure of artificial intelligence is motivated by the fact that the functioning of the intelligent system depends on their system for processing information. The nervous system in the biological systems is a system for processing information and it consists of a brain which is the central processing system for processing information and sensors. The neural cell, or the neuron is the basic information element in the biological systems, they are the base element of the biological intelligence. They work in parallel and cooperate between them, distributing their signals. Artificial neural networks (ANNs) consist of a system of artificial neurons which are mathematical models of the biological neuron, and they simulate the work of biological neurons (Petruseva, 2013).

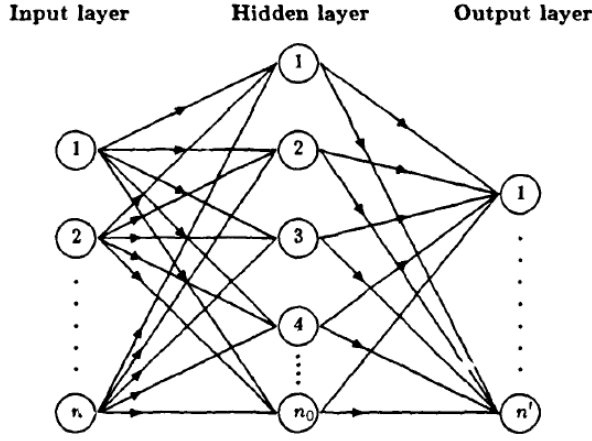
Particularly suitable for multivariable nonlinear processes, NN can identify the relationship between input and output variables and infer significant information for the task, if sufficient representative data are available. Using connected neurons, NNs in fact perform input-output mapping. Generally, NNs have input, hidden and output layer of neurons. Input data enter the NN through input layer, after that they are fed forward to the output layer through the hidden layer. Part of the available data are used for training Cost Estimation Model (CEM) for residential building using artificial neural network the NN and part of them for testing and validating the NN. The ability of the NN to give subsequently reasonable outputs for available inputs which are not contained in the training set (used for training the NN), is called '*generalization*' (Broomhead, Lowe, 1988). The highly connected, parallel structure of NNs also contributes to their high degree of noise immunity and generalization capability (Venayagamoorthy, 2004).

NNs can be applied for solving many engineering problems like function approximation, pattern recognition, prediction, optimization, data retrieval, classification, automatic control, and many others. Different type of NN architecture can be suitable for different type of tasks and also for different type of available data, so it is recommended to try several types of NNs before choosing the best one for our task, because in advance we do not know which type of NN will give the best results.

### Radial Basis Function Neural Network (RBF NN)

Radial Basis function neural network (RBF NN) has 3 layers: input, hidden and output layer and falls in the class of nonlinear layered feed-forward networks (Fig.1, Broomhead, Lowe, 1988). For each predictor variable there is one neuron in the *input layer*. The input layer feeds the values to each of the neurons from the next, *hidden layer*. This layer has a changeable number of  $n_0$  neurons, determined by the training process. Each neuron has radial basis function with center on a point which has dimension as the number of predictor variables (Sherrod, 2013b). For each dimension the radius (spread) of the RBF function can be different. The radius and the center are computed in the training process. After input vector is fed in the input layer, the neurons from the hidden layer compute the Euclidean distance of that vector (test case) from their centers and then RBF (kernel) is applied to this distance (as argument of the RBF kernel) (Sherrod, 2013b). Then the obtained value is

fed forward to the next *output (summation) layer*. Every value coming out from a neuron from the hidden layer is multiplied by a weight value associated with that neuron and passed to the output layer which adds up these values and presents this sum as output of the network. When the RBF NN is used for prediction tasks, there is only one output, but when it is used for classification tasks there are several output neurons in the output layer whose number is equal to the number of categories of the target variable (Sherrod, 2013b).



**Fig.1** RBF NN architecture (Broomhead, Lowe, 1988)

Usually Gaussian transfer function is used as RBF in the neurons from the hidden layer, and its values are inversely proportional to the distance of the input vector to the center of the neuron.

The RBF NN produces, in general, a mapping from an  $n$ -dimensional input space to an  $n'$  dimensional output space, which can be implemented with the equation (8) (Broomhead, Lowe, 1988):

$$s_k(x) = \lambda_{0k} + \sum_{j=1}^m \lambda_{jk} \Phi(\|x - y_j\|), \quad x \in R^n, \quad k=1,2,\dots,n' \quad (8)$$

where  $x$  is the input vector,  $y_j \in R^n$ ,  $j=1,2,\dots,m$  is the center of the  $j$ -th basis function from the hidden layer,  $\|\dots\|$  is a norm defined in  $R^n$ , which most often is taken to be Euclidean.  $\Phi\|x - y_j\|$  are set of  $m$  nonlinear basis functions, and  $s_k(x)$  is  $n'$  dimensional response vector (output) of the network and  $\lambda_{jk}$  are strengths of the connections from the  $j$ -th hidden neuron to  $k$ -th output neuron (Broomhead, Lowe, 1988).

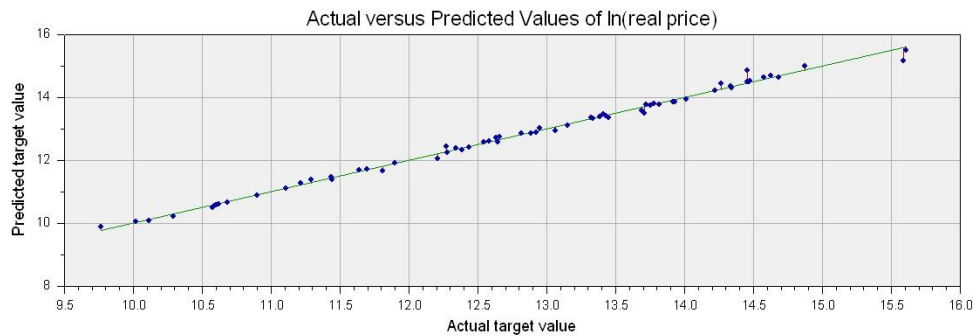
### 3. Results

For predicting the cost of construction in our paper, RBF NN from the predictive software DTREG (version 10.8.0, advanced version) was used (Sherrod, 2013a, 2013b). The available data for 65 finished construction projects were: contracted construction price, and contracted construction time, real construction price and real time of construction, year of construction and type of facilities. From them, as most representative for predicting the real price of construction only real and contracted price of construction and real and contracted time of construction were chosen. Their actual values were not used as input in the DTREG software, but logarithm of their values, because Bromilow's time-cost model was implemented, as was discussed in the previous sections.  $\ln(\text{real price of construction})$  is used as target variable, and:  $\ln(\text{contracted price of construction})$ ,  $\ln(\text{real time of construction})$  and  $\ln(\text{contracted time of construction})$  are used as predictors. All prices are converted in Euros and the time of construction is converted in days.

The *mean absolute percentage error (MAPE)* and the *coefficient of determination*  $R^2$  which gives the global matching of the model are the most commonly used estimators of the model accuracy. For the developed cost estimation model the MAPE is around 0.639 % and  $R^2$  is 99.207% ( $R^2=0.99207$ ). The *coefficient of determination*  $R^2$  expresses the goodness of fit of the model, or how good the



model predicts, or how good the target variable is explained by the predictors. Its values are between 0 and 1. The coefficient of correlation between actual and predicted values of the target variable is 0.996046 (Tab. 1). The *coefficient of correlation* is a measure of strength of the linear relationship between two variables. Its values are between -1 and 1. If the coefficient of correlation is 1 it means that the two variables have perfect positive linear relationship: when one of them increases, the other also increases its values, when the coefficient of correlation is -1 it means the two variables have negative linear relationship (correlation): when one of them decreases its values, the other increases. Fig. 2 shows the dependence between actual and predicted values of the target variable.



**Fig.2** Chart of the dependence between actual and predicted values of the target variable (DTREG software, Sherrod, 2013a)

**Tab.1** Results for the accuracy for Validation data (DTREG software, Sherrod, 2013a)

Validation data:
Proportion of variance explained by model ( $R^2$ ) = 0.99207 (99.207%)
Correlation between actual and predicted = 0.996046
MAPE (Mean Absolute Percentage Error) = 0.6387141 %

For all numerical variables DTREG gives report of their minimal, maximal and mean value and their standard deviation (table 2).

**Tab 2.** Minimal, maximal, mean value and standard deviation of the numerical variables (DTREG software, Sherrod, 2013 a)

Variable	# Rows	Minimum	Maximum	Mean	Std. Dev.
ln(real time)	65	2.70805	6.49224	4.67626	0.98394
ln(real price)	65	9.76549	15.60834	12.80141	1.45177
ln(price contr)	65	9.72448	15.60834	12.78244	1.45249
ln(time contr)	65	2.70805	6.57925	4.57496	0.95174

DTREG also computes overall importance of predictor variables included in the model, using sensitive analysis, so that their effect on the quality on the model is measured (Sherrod, 2013b), (Table 3). The contracted price of construction is most important for this model.

**Tab. 3** Overall importance of variables (DTREG software, Sherrod, 2013a)

Overall Importance of Variables	
Variable	Importance
ln(price contr)	100.000
ln(real time)	3.431
ln(time contr)	3.145

The parameters for the RBF NN computed by DTREG software are given in Table 4.

**Tab.4** *RBF Network parameters (DTREG software, Sherrod, 2013a)*

RBF Network Parameters:
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Number of neurons = 6
Minimum radius = 0.10524
Maximum radius = 35.0667
Minimum Lambda = 0.05175
Maximum Lambda = 6.40666

When working with RBF NN from DTREG software, some parameters for the RBF NN should be adjusted before starting work. They are: *maximal number of neurons* used by the model. When RBF training algorithm detects that over fitting can occur, it stops adding neurons (Sherrod, 2013b). For our model the maximum number of neurons was set to 100, but the algorithm adjusted it to 6. Other parameters are minimal and maximal value of the radius for the neurons from the hidden layer. These values were set to 0.01 and 40 for our model, but the training algorithm can determine that larger radius is needed. If the validation error is significantly worse than the training error, then the value of the maximal radius should be increased, if the training and validation error are close but they are larger than the required error, then the maximal radius should be decreased (Sherrod, 2013b). The software found them to be 0.10524 and 36.0667 respectively (Table 4).

Other important parameters required to be set by the user are *minimum and maximum lambda*, which are the minimal and maximal value of Lambda regularization parameter used for computing weights (for the connections between neurons) while new neurons are being added to the network. If the training algorithms indicate over fitting, when the validation error is much larger then training error, then minimum lambda should be increased (Sherrod, 2013b). For our model these values were set to have initial values 0.001 and 10 respectively, and the software computed them to be 0.05175 and 6.40666 respectively. The training algorithm for RBF NN implemented in the DTREG software uses an evolutionary approach for determining the center and radius for each neuron, and also for stopping the adding of neurons to the network by monitoring the error of the model (Sherrod, 2013b).

#### 4. Discussion

It is important to stress that using combination of process based model and data driven model contributed to obtaining drastically more accurate predictive model then using only data driven model. Without using process based Bromilow's model and using only RBF with the actual values of the input variables, the error of the model was drastically increased. MAPE was around 54%,  $R^2$  was around 44% and the coefficient of correlation was 0.672. Our future work will be directed towards research of the recent developments in artificial intelligence about hybrid models with process based and data driven methods. Also, if it is possible, it is recommended to try several predictive models in order to choose the best one, with maximal accuracy, because for different type of data, different type of NN will be suitable. We tried general regression neural network (GRNN) but the accuracy was slightly lower than RBF NN. With GRNN MAPE of the model was 0.644358, the coefficient of determination  $R^2$  was 0.98935 (98.935%) and the coefficient of correlation 0.994791.

We may conclude that for obtaining the most accurate predictive model the most important factors are: the quality and quantity of the available data for the process which should be modeled, choosing the most suitable (process based and data driven) model and also one of the most significant factor is choosing the most representative variables from available data which describe the process.

Other authors have also investigated modeling with RBF NN. Dong and Fajie (2010) obtained precise and objective solution for predicting construction cost with optimized RBF NN using supervisory algorithm for optimizing the output layer. They have confirmed the validity and superiority of RBF method and recommend it for construction managers for better decision making and also for broad application in other fields.

Rohani (2013) has also investigated RBF NN as a tool for prediction of tractor repair and maintenance cost using empirical data for 60 two-wheel drive tractors. He compared two algorithms

for RBF NN: Basic Back propagation (BB) algorithm and also Declining Learning Rate Factor (BDLRF) algorithm and obtained better performance for the prediction of tractor's costs with BDLRF. He recommends the RBF NN as a promising tool for predicting repair and maintenance costs. Juszczak and Lesniak (2016) have investigated applicability of RBF NN for prediction of site overhead cost index, investigating factors conditioning site overhead costs of Polish construction projects and also actual site overhead costs incurred by enterprises during project implementation. They used 143 real-life cases of completed building projects. The MAPE of the model was around 25%. The authors stated that RBF can be a promising solution for the site overhead cost index prediction.

## 5. Conclusion

Facility' construction cost is in interaction with construction time and schedule, resources for facilities construction, site conditions etc., so their estimation depends on numerous construction parameters. All of them are not known in early project phases when the construction cost is being estimated. Thus, historical data for facilities construction are among the data that are useful for developing models for construction cost estimation. In this paper historical data for construction cost for sixty five facilities are used for creating cost estimation model. Applying combination of process based Bromilow's time-cost model and data driven RBF NN and using DTREG software the obtained model has MAPE around 0.638% and  $R^2$  99.207% which is a drastically improved accuracy in comparison to the model that uses only RBF NN. The main limitation of the model is its application in similarly construction conditions of model data, when climate is not expected to have big turbulences and technical documentation and organization of construction works are with satisfactory quality.

Future studies could be focused on facilities cost estimation for different types of structures, different facility project realization phases, variety of construction conditions, comparison of the results obtained by different NNs usage, and research in the most recent developments of artificial intelligence (computational intelligence) about using combination of process based and data driven models.

The model presented in this paper is useful for facilities project participants in early project phases for fast cost estimation of facilities construction.

Although the model is useful for facilities construction cost prediction in circumstances that characterize the analyzed projects, it can be used as an experience for developing other models too.

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# **Alternative workplace design – changes from residential building into a workplace**

Daniella Axelsson León

Camilla Mittet

Helge Lind

Oslo and Akershus University College of Applied Sciences, Oslo Business School, Norway

E-mail: s306527@stud.hioa.no

E-mail: s306435@stud.hioa.no

E-mail: s147823@stud.hioa.no

## **Abstract**

The aim of this paper is to explore if there could be an alternative workplace design for a building in Asker kommune, that could offer a solution better suited for the tenants. The study reviews some of the literature on office design and its impact on the employees working in different workspaces. Through a sight inspection and a semi-structured interview, the problem areas with the current design were identified. From the literature review a range of different aspects that impact how different workplace design is perceived and accepted among employees is found. From the research, it is found that the users of the premises in Asker komunne are part of an organization that works with people in different settings such as phone calls, visits and at the office. As the visits make up to ca 40% of their job, it means that ca 60% percent of the time the tenants are using the premises in different ways. Considering that the current premises do not allow the tenants to have their own private cellular office, it has been suggested to refurbish the premises to a combi-office. This workplace design aims to take confidentiality and privacy into account but also to facilitate concentration as well as collaborative work for the tenants by assigning focus and collaborative areas. This design will make room for some of the desired specifications of the tenants. The solution is just one of several possible alternatives.

**Keywords:** Facility management, Workplace design, Combi-office, Workplace, Space management, Work facilities

## 1. Introduction

As today's organizations operate in constantly shifting environments, it becomes more important for organizations to be able to adapt externally and internally (Roos, et al., 2014). In the pursuit of becoming an attractive organization it also becomes more important to create workplaces that inspire people, in addition to being flexible for diverse types of functions and activities. These changes represent new challenges for organisations and facility managers as they require innovative approaches to office and workplace design. Furthermore, research shows that the office layout has an impact on health and performance (Haynes, 2008b), but also that various aspects of the office environment have an impact on productivity (Haynes, 2008a).

NS-EN 15221-1 (2007) makes a distinction between “room and infrastructure” and “people and organisation”. Within the category of “room and infrastructure” lay strategic planning and management of space as well design and ergonomics of the workplace. The rapid changes within workplace practices, require that the facility manager of a building can plan, optimize and manage the use and design of the space at the workplace in more contemporary ways. When planned in a strategic and smart way, always focusing on supporting the core business, Facility Management (FM) can play an important role for the organization and its competitive advantages. FM can contribute in attracting future workers to the business, retaining talented employees, enhancing the employee experience at work as well as creating a much more efficient and productive workplace (International Facility Management Association, 2017).

This assignment aims to examine the current status and layout of the office at Idunns vei 1 owned by Asker Kommune. The office premises at Idunns vei 1 were previously used as private apartments, thus there is a big need to rearrange and plan the design of the offices accordingly to the need of its current users. The existing design and use of the offices are not efficient nor effective in relation to the activities within the organisation and its employees. The assignment will present a variety of research on why and how office design plays an important role in the workplace, in addition to different approaches to office design. Later it will go on suggesting an alternative office design that could be more appropriate and realistic for the organisation's activities and employees. This alternative design may implicate a different approach to how some activities are currently being executed; this issue will be discussed at the end of this paper.

## 2. Theoretical background

As a Facility Manager, you seek to bring added value to the core-business. One way to add value is by laying the conditions right for the employees to perform at their best and use the available space efficiently (Booty, 2011). Further, the design of an organization's workspace may be seen at as a method to attract new employees and keep existing staff, as well as it sends a message to the surroundings about the organisation (Booty, 2011).

### Productivity

Productivity is usually in the interest of most organizations. The term productivity can be understood as a measurement of the output of an organization per unit of input (Law, 2009). Barry Haynes (2008a: 49) states that “the FM profession can have a significant impact in creating high-performance workplaces by placing greater emphasis on office environment comfort systems and their control systems.”. Such a statement leads us to how to interpret the term *office comfort*. Barry Haynes (2008a) makes a point to express the lack of a universal definition of the term office comfort. People interpret office comfort subjectively, and this affects the possibility of comparing different studies on the subject.

Leaman and Bordass (1999) identified, what they call, four “killer” variables that might influence human productivity in organisations: personal control, responsiveness, building depth and workgroups. The killer variables show important issues when working with space design. Personal control includes the variables: heating, cooling, lighting, ventilation and noise. Responsiveness is about how rapid the building can change, the adaptability of spaces, response-time, reconfiguring of

furniture and so on. Building depth affects, among other things, the possibility for using natural ventilation or air condition, and the potential of natural lighting. The cluster workgroups show that the size of the workgroup matters. Designers and managers should try to offer the occupants of a building many options for personal control, rapid response environment, shallow plan forms, spaces that fit the activity and zoning for personal control (Leaman & Bordass, 1999).

### **Health, job satisfaction and well-being**

Danielsson and Bodin (2008) studied the influence of office environment in relation to health and job satisfaction where they looked at seven different office types: cell office, shared room office, small open plan office, medium-sized open plan, large open plan, flex office, and combi office. They found that the cell office and flex office had higher ratings of self-reported health, well-being and job satisfaction, and all the open plan offices scored lower in these categories. The good results for the cell offices and the flex offices could be explained by their ability to meet the need of personal control. Personal control is one of the killer variables that could also influence productivity, as explained earlier. Shared room offices, and small and medium-sized open plan offices did not have the biggest impact on general health, while small and large open plan offices did not have the biggest impact on physical and psychological health problems. In terms of job satisfaction, the flex office, the shared room office and the cell office was found to be the best type of office. The office type with the worst outcome related to the parameter *reaching goals at work* was the combi office, and the medium-sized open plan office had the worst outcome related to the parameter *satisfaction at work*. A suggestion by Danielsson and Bodin (2008) is that organizational factors could explain the employee's lower satisfaction at work. For all the open plan office's the parameter *cooperation* showed high satisfaction. It is worth to mention that the findings were different among all three different open plan offices; for instance, Danielsson and Bodin (2008) raise a question about why medium-sized open offices have a higher risk of reporting lower job satisfaction and lower health. They indicate that part of the reason, behind this finding, could be that the small and medium-sized open plan offices lack the rooms "in the back" where they can have privacy. The small open plan office showed higher satisfaction among the employees, and this could be due to the smaller group size.

De Been and Beijer (2014) found that the office type does affect the satisfaction with the office environment and the perceived productivity support. People working in cell offices and shared room offices were more satisfied regarding privacy, concentration and with the productivity support than the people in combi or flex offices. People working in combi offices were more satisfied with the communication with the fellow employees than the ones working in flex offices. De Been and Beijer (2014) proposed that the assigned workstations in the combi office makes it easier to find and approach people than in flex offices. They found that employees working in combi or flex offices were more satisfied with the architecture and office lay-out than their counterparts working in offices with another space design. The results also showed that people working in flex offices were less satisfied with indoor climate than the ones working in cell offices and shared room offices. They found that satisfaction with the organization, along with gender, explained most of the variance.

A literature review by De Croon et al. (2005) consisting of 49 studies showed that the office lay-out has an effect on short-term reactions and work conditions, strong evidence supported that open offices reduced the employee's job satisfaction and privacy. This is also supported by the findings of Danielsson and Bodin (2008). Further, De Croon et al. (2005) also found that job demands, job resources and short-term reactions were affected by the office concept. An increase in the cognitive workload were found in the open office. They point out that open workspaces affect the privacy aspect as both visually and acoustically make it difficult to obtain confidentiality. There was not enough evidence to support an effect of office lay-out regarding autonomy, crowding stress, performance, health and communication. The researchers propose that the negative effects of the office lay-out may be less outspoken if environmental-related variables (lighting/air) and work-related variables (low task complexity) are also taken in to count.



## **Landscaping**

Another way to enhance and make the employees more positive about the workplace is to add plants to the office environment. In a study conducted by Smith et al. (2011) two different designs in a building were compared, one with plants and one without. The findings suggested that employees in the office with plants were less likely to feel that the work environment contributed to increased work pressure. They were also less concerned about their health at work and did not perceive low morale in their work area. In general, this suggested a preference for plants among employees. The study found a significant reduction in short-term sickness leave in the office with plants compared to the office without plants.

## **Activity-based working**

Skogland (2017) argues that activity-based working consists in integrating a variety of elements within an organisation to help fulfilling higher strategic goals. Among these elements are work processes, space management, technology and organizational and cultural characteristics. Furthermore, Appel-Meulenbroek et al. (2011) explains that the aim with an activity-based office concept is to increase interaction and communication to boost productivity at the workplace while focusing on employee satisfaction and accommodation costs reduction.

Moreover, Van der Voordt (2004) presents other reasons to why organization wish to invest in workplace innovations; these being: increasing flexibility and employee satisfaction, enhancing productivity and effectiveness, reducing costs and giving an image of being a professional and modern workplace to attract and retain employees and clients. The general idea of the activity-based concept is to enable the employees to choose a workstation based on their preferences and the activity they are about to do (Appel-Meulenbroek et al., 2011). Moreover, as employees are one of the most important resources an organization has, it is of great value finding harmony between “the organizational interests (productivity through effectiveness and efficiency)” and “the interests of the employee (physical and psychological well-being)” (Appel-Meulenbroek et al., 2011).

There are mixed and contradictory findings regarding flexible work settings. One example is a study done by Orbach et al. (2014) that showed a higher level of face-to-face communication among employees at flexible work settings than among employees using fixed seating arrangements, while another study done by Millward (2007) found that employees with flexible seating arrangements valued face-to-face communication less than their peers with assigned desks, also those with assigned desks had a stronger team identification than those without assigned desks who had a higher organizational identification. Skogland (2017) explains furthermore that some studies have found benefits such as higher organizational value and increased employee satisfaction in activity-based workplaces, while other studies show opposite results such as threat of identity, lack of privacy and higher perceived crowdedness. Vos and Van der Voort (2001) concludes in their article that some of the most positive consequences of innovative workplaces such as those with activity-based workstations are increased interaction and communication with colleagues, use and application of modern technology, more freedom in choosing a workplace, and innovative and luxurious surroundings. On the other hand, flexible workplaces do also have negative aspects, some of these being loss of privacy and concentration, sometimes a feeling of being limited, as well as stimulus overload leading to an increase in perceived pressure (Vos & Van der Voort, 2001).

A study conducted at a large Norwegian company where an activity-based way of working was implemented, found that employees with consultancy and advisory roles perceived activity-based working as something positive (Skogland, 2017). These employees felt they had an elevated level of autonomy and interaction, and therefore did not feel the need to have a workstation of their own. Employees within other departments such as tax and legal, were the most unsatisfied with the activity-based working as they felt it was difficult to achieve and maintain good levels of concentration. In addition, employees in these departments claimed that moving between workstations was time-consuming and disruptive and therefore did not use the rooms and areas for withdrawal as much. This suggests that work processes, nature of work and degree of mobility plays a significant role in the employee adaptation to the concept (Skogland, 2017).

However, a more open and flexible stand point towards the concept was present when the employee's adaption process was supported by a combination of aspects such as organizational culture, key organisational members and managerial behaviour. These aspects played a significant role in influencing the way members of the organisation valued, perceived and used the concept of activity-based workplace. Other factors that influenced the function and outcome of the concept were spatial factors, employee mobility, time spent in the office, physical, visual and social boundaries, and need for confidentiality.

Appel-Meulenbroek et al. (2011) studied the usage and function of activity-based working in four different office organizations. They found that the use of the workstations was by far less than intended by the activity-based concept as only 12 percent of the end-users used more than three types of workstations. Furthermore, the study showed that 68 percent never switched workstations during an average day and 57 percent said they choose a workstation with as much visual privacy as possible. The study also established that functional aspects of the activity-based workstation such as for example near team/project partners, ergonomics, location known to others and quality of IT hardware, have a dominant influence when choosing a workstation. In overall, the study established that the activity-based concept is not always used as intended which could lead to a loss in productivity, illness and dissatisfaction. Further, the study emphasised that people's personal preferences appear to play a significant role on the use of certain types of workstations, and that unwanted levels of stimuli from indoor climate could result in misuse or lack of use of some workstations.

<b>Cell office</b>	Single room office
<b>Shared room office</b>	2-3 people with similar work assignments in the same room
<b>Small open plan office</b>	4-9 persons per room
<b>Medium-sized open plan</b>	10-24 persons per room
<b>Large open plan</b>	More than 24 persons per room
<b>Flex office, e.g. activity based</b>	No individual workstations and, in addition, spaces suitable for different work activities such as concentrated work, private calls, collective work, etc.
<b>Combi office</b>	Individual workstations and, in addition, spaces available to specific work activities

*Figure 1 – Summary of the different office designs highlighted in the case-study*

### 3. Methods

In this assignment, the aim was to use one of the buildings belonging to Asker Kommune as a case to explore how workspace can best be designed to fit the users of the building, taking different theoretical approaches as starting-points. Asker Kommune kindly allowed us to use the building at Idunns vei 1 for this purpose. Our investigation started by collecting and studying relevant documentation about the case, to the extent it was made available to us by Asker Kommune. The documentation included drawings of the building together with a brief description of the building and challenges in relation to the current design not being able to meet the requirements of the users. In addition, we got insight into a risk and vulnerability analysis, conducted by one of the two current tenants, highlighting how the current situation is affecting their ability to perform their work in an efficient, healthy and safe manner.

To get a better understanding of the current situation we conducted a visit to the building. Prior to the visit, we put together a list of information required for us to be able to answer the relevant questions. This list was also used as a guide for a semi structured interview to make sure we collected all relevant information. Asker Kommune was evaluating four alternatives for the building: Alternative 1, perform a minor upgrade of the building. Alternative 2, abandon the building and await decision for future use or actions. Alternative 3, major renovation of the building with

temporary re-location of the tenants. Alternative 4, demolish the building and build a new building. Due to the scope of this assignment we decided to focus on how a re- design of the offices may result in a more efficient use of the available space in line with the requirements from the users. Depending on the extent of the re-design, this would correspond to alternative 1 or 3, above. Our data collection focused on collecting data to be able to map the current design and use of the building. Calculating the cost related to the proposed changes was out of scope for this assignment. Furthermore, we did not aim to assess the general condition of the building or its technical installations, in detail. Our analysis and result are based on certain requirements being met, as discussed below.

During the visit, we were guided by a representative of Asker Kommune and were allowed access to the entire building and the surroundings. From the owner of the building we were advised to focus only on the area currently occupied by one of the tenants (Samfunnshelse og integrering). This covers the whole of first floor and parts of second floor, approximately 324 sqm (number provided by Asker Kommune). Observations were documented both by taking notes and by photography. During the visit, we also had a meeting with a representative from the department currently using the premises who answered our questions and presented the tenants point of view on the current situation. Answers and information provided during the meeting were consecutively documented in writing. After the meeting, we also received a written summary of the main points and desires from the tenant.

#### **4. Short summary of main points from the observations**

The building consisted of two floors, approximately 264 sqm each. It was evident that the current layout of the building was not very space efficient. Being old flats, several of the rooms, were used as offices, including bathrooms and kitchenettes taking up a significant amount of space without having any function in the current use of the building. The offices were used by 2-3 persons each, and were furnished with standard desks and work stations facing the walls, with 2-3 persons sitting next to each other (side by side) or facing opposite walls (back to back). The tenants had eight offices with a total of 20 work stations, mainly in the first floor, but also three offices in second floor. In addition, they had one meeting room (up to 18 people), a room for printing and storage, a small room for archives, a room for storage, a toilet, a broom closet and a kitchen for preparing lunch and coffee. The department had in total 18 employees (approx. 14 full-time equivalents) working in the building, consisting of 11 ergotherapists and 7 physiotherapists. The work tasks were a mix of pure office work, internal meetings with colleagues, meetings with clients and approximately 40% of the time was spent visiting clients away from the building. Each of the employees regularly communicated with clients and collaborators by phone (incoming and outgoing). All meetings with clients were planned and only clients having an appointment came to visit at the building.



*Figure 2 – Idunns vei 1 seen when approaching the building*



*Figure 3 – One of two office desks, located in what previously was the living room*



*Figure 4 – An old bedroom is now used as a tiny personal office*



*Figure 5 – The former kitchenette is now dead space in the office*

### **Main relevant challenges in the current situation**

Given the scope of our project, the main relevant challenges with the current situation could be grouped into issues concerning the current design of the building not being suitable for the activities to be performed and the lack of space in general. The risk and vulnerability assessment highlighted that it was difficult to maintain confidentiality when multiple people shared the same

office, especially during conversations with clients. Reduced work efficiency and disruptions from co-workers were also highlighted. These issues were also reiterated by the tenant during the visit. From the tenant's point of view, the optimal design would be to have one office per employee rather than offices shared by more than one person. The assessment also highlighted the need for more space allocated to meeting rooms and social areas (lunch room) as well as more toilets and room for storage. The tenants had at the time one meeting room that was used both for internal meetings, meetings with clients and as a lunch room for the employees. The desired size of the meeting room was up to 30 persons (capacity today is approximately 18 persons). There was only one toilet to be used by all employees and visitors in the first floor.

<b>Confidentiality</b>	Workspace that allows for confidentiality between therapist and patient
<b>22 individual offices</b>	Individual offices that supports confidentiality and noise reduction
<b>Allow for paper work</b>	Due to the nature of the job, the tenant cannot work just through/with digital tools
<b>Universal design</b>	Wheelchair accessible premises
<b>More meeting rooms</b>	Meeting rooms that fit 10-14 people as the tenants have shorter meetings quite often
<b>One big meeting room for 30 people</b>	The tenants have 3-4 big meetings a year with other therapists in the municipality
<b>Shared lunchroom</b>	The tenants wish to be able to sit together at lunch around 11:30am.
<b>Kitchen</b>	A proper kitchen where meals can be prepared and/or warmed-up
<b>At least two WC</b>	In the current situation, the tenants share one WC
<b>Archive room</b>	Some place safe where the therapist can storage journals and other confidential information
<b>Storage room</b>	Room where other things can be stored

*Figure 6 – Summery of the most important requirements from the tenants*

## 5. Requirements and prerequisites for further analysis

At the time of the research the building had no mechanical ventilation and the only ventilation was by air vents through the outer wall (some rooms have no possibility for ventilation except for windows that can be opened). The result of this was poor indoor air quality, which became evident in measurements of CO<sub>2</sub> concentration being above the recommended levels during the working day. Efficient use of the space in the building would require a system for ventilation with the capacity to provide the sufficient air quality. The only access to the second floor was by a stairway at the entrance of the building. To ensure accessibility for employees or visitors with disabilities, communication between the two floors would need to be established, most likely in the form of an elevator. In this assignment, we did not examine the possibility for the building to meet the requirements above as this will have to be done by qualified personnel. Furthermore, we did not consider solutions for how to establish a safe archive to be compliant with relevant regulations.



## 6. Discussion

This assignment addressed the work premises at Idunns vei 1 where the workplace design did not meet the need of its users nor provides an efficient work environment. The premises were, as previously stated, not being optimally used because of its design. However, the premises offered a big potential for alternative workplace designs. We found a wide range of articles and literature looking at different aspects of office design/ office type/ office lay-out, and how these different office designs could affect productivity, well-being, job satisfaction, health, organization and so on. We had to focus on a few and draw the substance out to support our assignment on workplace design, and to address important aspects to bear in mind when approaching this subject.

One approach to office design, favoured by the tenants of Idunns vei 1, was cell offices. Cell offices have a range of potential positive impacts on the employee's satisfaction with the work conditions (Danielsson & Bodin, 2008; Leaman & Bordass, 1999; De Been & Beijer, 2014). Common for all three studies is that the aspect of personal control is regarded as important and is easiest to manage by the tenants themselves, if they had a cell office. Danielsson and Bodin (2008) found that cell offices along with flex offices had the highest rating of self-reported job satisfaction. They point out that the need of personal control is important to meet, this is again supported by the study by Leaman and Bordass (1999). De Been and Beijer (2014) found that employees working in cell offices were more satisfied with privacy, concentration, indoor climate and productivity support. It is easy to understand that by being the only person at an office the issue of concentrating and keeping privacy, keeping up the productivity and regulating the indoor climate in your own personal space, vanishes. In regard to the aspect of communication, De Been and Beijer (2014) showed that people in combi offices were more satisfied with communication in comparison with the people working in cell offices. The tenants at Idunns vei 1 had cell offices as a favourite office design and research speak in favour of such a solution. What we saw, when we were at sight, was that this would be difficult to integrate in the building they had at their disposal. It would most likely be a bigger cost, and referring to our methods, space is also an issue to take into count.

In the opposite end of the scale from cell offices, we find the open plan design where multiple workstations are in the same room. In the open plan design all tasks will be performed at each person's designated work station, which could be feasible if employees perform more or less the same type of work throughout the day. Even though being very space efficient, the open plan design may introduce other challenges to the working environment and influence job satisfaction, as for example general health issues among workers (Danielsson & Bodin, 2008) and distractions from noise and perceived lack of privacy (Kim & de Dear, 2013). Considering the nature of the work performed by the employees in Idunns vei 1, one of the major challenges with a pure open plan office design would be to maintain the required level of confidentiality when calling to or meeting clients.

As the design of the workplace at Idunns vei 1 made it hard for the employees to interact with each other, an activity based workplace would facilitate the interaction and communication between the users as suggested by Vos and Van der Voort (2001). Further, due to higher levels of interaction and autonomy it is more likely that the current users of the premises would feel more satisfied with their workplace as argued by Skogland (2017). Being in interaction and communication with their peers and other parts of the organization might also contribute to a higher organizational identification for the users of the premises, although it could mean a loss in team identification (Millward, 2007). However, it is important to have in mind that the users of the premises at Idunns vei 1 had stressed many times the importance of confidentiality in their work; more possibilities for interaction mean also more open spaces at the workplace which could play a significant risk regarding the confidentiality aspect of their work.

Changing the work design at Idunns vei 1 to an activity-based workplace would also imply a change in the surroundings to more innovative and luxurious ones, as well as a higher use and application of modern technology (Vos & Van der Voort, 2001). Even though use of modern technology might seem as something exclusively positive, these changes could mean big

challenges to employees that do not know, are not familiar with or do not feel comfortable using much technology. In addition, as a significant part of the job of the current users at Idunnsvei 1 consists of paperwork, the transition from paperwork to using modern technology and digitalisation would imply a huge readjustment for the users and organisation. To address these issues, it is important to train and coach the employees in activity-based working and all the elements behind this concept as a part of the implementation process (Appel-Meulenbroek et al., 2011).

The users of the premises in the current building were assigned personal desks, and while activity-based working would imply more freedom (Vos & Van der Voort, 2001), it could also mean a great loss of privacy, identity, and stability (Skogland, 2017) to not have your own space at the office. Moreover, as the users expressed a desire to have own offices, an entirely activity-based working could be perceived as crowded leading to stimulus overload and loss of individual concentration as a result (Skogland, 2017; Vos & Van der Voort, 2001). Another critical issue to address is the fact that the employees in these premises did not have a big need of interaction nor creativity to do their work, and as presented by Skogland (2017) this could mean that the users would perceive activity-based working as time-consuming and disruptive. This could then lead to the activity-based areas not being used as intended or not being used at all, resulting as argued by Appel-Meulenbroek et al. (2011) in productivity loss, illness and dissatisfaction.

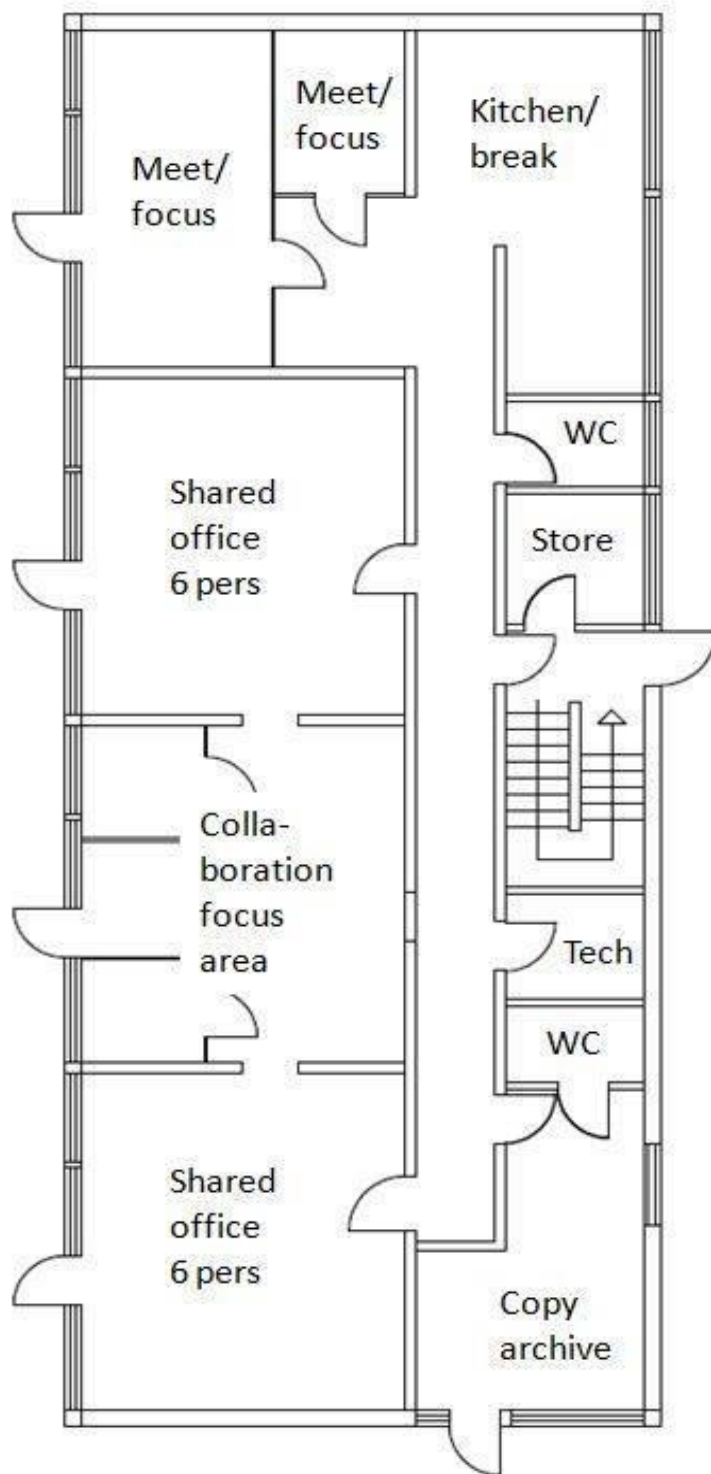
Considering the discussion above, we would propose a combined solution (combi-office) consisting of both designated workstations in combination with areas to be used for certain tasks. In practice, this could mean having in total 3 shared offices with 6 work stations in each office (2 shared offices in first floor, 1 in second floor). This way each employee can have their own designated work station with the possibility to store necessary documents, manuals etc. needed to perform their work, within reach. By being more space efficient than the current design, it will also allow for more space to be allocated to meeting rooms, social areas and areas for collaboration and focus. To ease the negative effects of shared offices, such as distractions caused by noise from colleagues, we would also suggest establishing separate areas where colleagues can meet for discussions, make phone calls and other tasks that could potentially generate noise. One major concern with shared offices from the tenant's point of view is the limited possibility for the employees to meet clients in their own office, as it is desired to have meetings with clients without worrying about the privacy. Our solution, being based on shared offices, does not accommodate employees having meetings with clients in their own office. However, by having available more meeting rooms, our solution offers the possibility to perform meetings with clients in a meeting room rather than in an office. Efficient use of the meeting rooms will most likely require a kind of booking system making it possible to quickly check the availability of a meeting room, for instance when making a new appointment with a client. The suggested solution is greatly facilitated by the fact that all meetings with clients are planned. Therefore, there should be no need for meeting rooms to be used for spontaneous meetings with clients. To further reduce the risk of privacy issues during meetings with clients, we propose to place these meeting rooms separated from the office and collaboration area. This way there should be no risk that clients accidentally hear or see confidential information while visiting the building. For spontaneous meetings between colleagues, the collaboration areas can be used. Currently the building has no dedicated lunch area, but use the meeting room for lunch breaks. The tenants would have preferred a dedicated lunch area. However, establishing a dedicated lunch area would require a significant amount of space that will remain unused for most of the day. In our solution, the largest meeting room will still have to be used during the lunch break, but in addition the kitchen area will be expanded, allowing employees to use this area for breaks outside of the lunch time. A draft of an example layout for the first floor is given in figure 8. Regarding the tenant's desire for a larger meeting room for up to 30 people, we suggest looking at other alternatives than establishing this in-house, given the amount of space needed for such a meeting room and the very low frequency of large meetings. Renting an external venue for these meetings would most likely offer a more cost-effective alternative, Asker Kommune offers several venues that can be used for this purpose.



Thus, our solution does not reduce the adaptability of the building for alternative use in the future.



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*Figure 8 – Drawing of the proposal (Combi-office) Note: Draft, measures not accurate*

There are several important aspects of this case-study. First, this case-study did not examine the exact hours the employees are away from their desk or the office. This means that in theory there could be too many people at work at the same time and therefore it would not be enough collective or focus areas for everyone at once. To try to address problems like this and to facilitate the overall workflow at the premises it is crucial to have a well-functioning IT-system in place. Thus, to make sure combi-office is an achievable solution for the premises and the stakeholders, further research needs to be done about the absence patterns of the employees, and the function of an IT-system. Furthermore, a detailed analysis regarding cost of the implementation will likely impact the final result of the suggested

design. Another aspect to have in mind is that articles used in this assignment focused on office design in relation to big organisations, thus it could be possible that some of the negative and positive aspects of the designs do not directly apply to our study. As stated before, this case-study was done on a workplace consisting of 18 employees, negative and positive outcomes of an alternative design could therefore merely be a result of cultural aspects of the organisation, not directly of the office design itself. Considering this, it is of further importance to bear in mind that going from the current office design to a combi-office requires changes in work routines and work processes for the users of the premises. Consequently, it is crucial as a Facility Manager to take into account the human aspect when thinking of changing a workplace into a more innovative and modern one, and address issues such as for example loss of personal control and identity, among others (Vos & Van der Voort, 2001). In addition, Appel-Meulenbroek et al. (2011) explains that problems like these can be handled by including the users during the design process. Furthermore, as suggested by Skogland (2017) transitions between office designs could be facilitated with the support of proper change management and cultural change, this being something that should be prioritized and included in the transition-phase from one office design to another in the premises at Idunns vei 1.

## 7. Conclusions

The findings demonstrate that there are several variations of office designs, and each one of these have positive and negative aspects. These aspects, however, do not apply to all organisations as each office design works better for certain types of organisations than for others. The users of the premises at Idunns vei 1 are part of an organisation that works with people in different settings such as phone calls, visits and at the office, and ca. 60% percent of the time the tenants are using the premises in some way. Considering that the current premises do not allow for the tenants to have their own private cellular office, it has been suggested to refurbish the premises to a combi-office taking confidentiality and privacy into account but also to facilitate concentration for the tenants by assigning focus and collaborative areas. To reduce the risk of dissatisfaction and loss of productivity it is crucial to address the human aspect of office design and try to fulfil the needs of the users by involving them in the design process. Not least, to successfully implement changes it is significant to do additional research on the work patterns of the tenants as well as to make sure that the employees' adaptation process is supported by change and cultural management.

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# **Facility management and university facilities – the added value of FM and its role in students satisfaction**

Daniella Axelsson León

Oslo and Akershus University College of Applied Sciences, Oslo Business School, Norway

E-mail: s306527@stud.hioa.no

## **Abstract**

The purpose of this literature review is to examine the added value facilities management can bring to high educational institutions (HEI) and what factors influence on student satisfaction. Further, it aims to present some current and future challenges FM faces in university institutions. A literature search was conducted in HIOA's database Oria and research publisher Emerald. The search for relevant articles was based on "university facilities", "facilities and high education", "university", "facility management university" and "facility management university facilities". Other articles were found through bibliographies of relevant articles. Results of the literature review show that FM plays a significant role for the learning and teaching aspects of an university, and through maintenance and development of the facilities FM can contribute to added value. Moreover, good facilities contribute to student satisfaction as well as attracting and retaining students and staff. Students whose needs are fulfilled will most likely help strengthen the university's image through word-of-mouth, which ultimately results in added value to the HEI. This way FM can contribute to competitive advantage and marketability for the HEI. FM can also contribute to a more efficient operation of the facilities, resulting in cost reduction. However, FM faces internal and external challenges now and in the future. As funding is the biggest problem of FM departments at universities, it is important that each FM department develop a clear strategy to present to the university board to make them aware of the added value FM can bring to the institution.

**Keywords:** Facilities management, Facilities manager, University facilities, High educational institutions, Added value

## **1. Introduction**

Facility Management is defined by The International Facility Management Association as “a profession that encompasses multiple disciplines to ensure functionality of the built environment by integrating people, place, process and technology (International Facility Management Association, 2014). This definition indicates that as a facility manager, one must work systematic with the hard aspects of FM such as buildings and maintenance, and the soft aspects such as people and change. In addition, as a facility manager one must also take into consideration the interests of various individuals and groups; this means that the management of stakeholders is a key factor to the success of the facility management practice in a facility (Atkin & Brooks, 2015).

Facility managers must always evaluate if the current facilities are appropriate to support the core activities of any given organization, and take the actions necessary to do so. This implies that change is a natural part of managing a facility and thus these changes must be planned and managed properly (Atkin & Brooks, 2015). Nowadays, almost all types of organizations must deal with changes thanks to the rapid evolution of technology and educational methods. Not least, universities are facing challenges in adapting their facilities to meet the requirements of the users. Both students and university staff demand facilities that fulfil the requirements of interaction and collaboration, and that also facilitates innovative learning and teaching processes. (McLaughlin & Faulkner, 2012). Adapting university facilities to meet the needs and demands of its users is not only important for retaining current students but also attracting new students to the university, either directly or through enhancing the university's image (McLaughlin & Faulkner, 2012; Vidalakis, Sun & Papa, 2013).

Hanssen and Solvoll (2015) point out that it is more likely that satisfied customers of any kind – e.g. students – generate positive word-of-mouth than unsatisfied ones. Furthermore, working to adapt university facilities and effectively doing so, has a lot to say for to what extent the university can accomplish its mission and goals of engaging learners and providing students and employees an appropriate and suitable infrastructure to execute their responsibilities (McLaughlin & Faulkner, 2012; Hanssen & Solvoll, 2015)

The main purpose of this paper is to present how FM can contribute to the added value of high education institutions and its core operations. In addition, the paper aims to present issues to which university institutions should pay more attention regarding facilities and how facilities can contribute to student satisfaction. In the end, the paper will introduce some current and future challenges facing facility managers in university institutions.

## **2. Theoretical background**

### **2.1 The added value of FM in HEI**

High education institutions' (HEI) primary focus has always been learning, teaching and research (McLaughlin & Faulkner, 2012). However, changes in learning, education theories and information and communication technologies have led to changes in ways teaching and learning occurs, which have put pressure upon existing institutions and their facilities. University buildings, lecture rooms and other facilities do not meet the current needs of staff and students and the demands of higher technology; in realising this, it has been an increasing interest in facility management among actors within the educational sector. (Beckers, van der Voordt & Dewulf, 2015; McLaughlin & Faulkner, 2012). Furthermore, it is crucial to understand how FM can add value to higher education institutions. Lavy (2008) states that organizations and institutions often do not identify the role facility management (FM) plays in the performance and success of their business. He continues explaining that other aspects such as the building portfolio and environment also are part of determining the organizations' and institutions' business success by “monitoring daily maintenance, operations and energy consumption; conducting condition assessments and benchmarking studies; adapting and aligning with policies; and assisting with implementation of the organization's strategic and tactical planning.” (Lavy, 2008: 304). Facilities constitute about 80 percent of most organizations' fixed asset worth (Kamarazaly, Mbachu & Phipps, 2013) and Higher Education Pay and Prices Index (HEPPI) shows that HEI's second largest costs after salaries are expenditure on estates and facilities (Vidalakis, Sun & Papa, 2013). Thus, Vidalakis, Sun and Papa (2013) argues that it is of great importance for the institutions to manage and use its facilities in the best way possible to be able to release funds to invest in other relevant areas of

the user's experience. Moreover, they emphasise that the maintenance and management of the buildings contribute to add value to the university by strengthening its identity, image and marketability; this way enabling the retention of current staff and students but also the recruitment of new ones.

Studies aiming to explore the relationship between facilities and the impact of facilities on the user's view and preferences have been conducted (Price, Matzdorf, Smith & Agahi, 2003; Vidalakis, Sun & Papa, 2013). Price et al. (2003) found that even though "course" was the most important factor when choosing an university, facilities and learning spaces such as availability of computers, quality of library, quiet areas, areas of self-study among others were also important factors in deciding to join a HEI. Moreover, their study showed that HEI can become more attractive by offering high-quality arrangements such as catered halls and en-suite facilities. This is supported by Vidalakis, Sun and Papa (2013) who show that high-quality facilities influence students' choice and that facilities can add value to the HEI as well as enhance its image and competitive advantage. Further, Vidalakis, Sun and Papa (2013) claim that maintenance and management of existing facilities might have a greater potential to create value to the institutions and enhance student satisfaction, than the potential value and satisfaction new high-profile facilities can create.

Lavy (2008) investigated the implementation of different aspects of FM in higher education buildings and found that the FM department was lacking a clear strategic and tactical planning, this leading to reactive maintenance instead of a regular or scheduled one. Moreover, his study showed that the costs of repairs and replacement were not tracked nor registered in any system at the university level. The results further showed that energy consumption was not being managed by the FM department and that current consumption was not being benchmarked against previous consumption during the same period; Lavy (2008) argues that this could be helpful information to lower energy costs and add value to the HEI as a result. Another main found of his case study was that no benchmarking information was collected by or being provided to the building manager for further management and decision making in the future – something that potentially could impact the added value FM could bring to the institution.

## **2.2 (New) Demands on university facilities**

Increased impact of globalization has led to the creation of an international market for education, and at the same time an increase competition between HEIs to attract students. To be successful in the educational market, universities must build a market-orientated strategy to achieve differentiation in the market. (Hemsley-Brown & Oplatka, 2006; Butt & ur Rehman, 2010). To be able to differentiate from competitors, each HEI must pay attention to the factors that are importance for student satisfaction, and as stated by McLaughlin and Faulkner (2012:

141) "university facilities play an important role in attracting and retaining students in a competitive demand". Hanssen and Solvoll (2015) conducted a study showing that HIEs' reputation and facilities are the two variables with greatest impact on student overall satisfaction. Moreover, their study showed that student overall satisfaction was positively influenced by the students' perception about the university facilities. This means that the more positive perception students have about HEIs' facilities, the higher their overall satisfaction with the university. Another important found was that social areas play the most significant role in students' overall satisfaction with the university facilities (Hanssen & Solvoll, 2015). Other significantly positively correlated factors with student overall satisfaction with university facilities are adequate temperature, air quality, audio and visual comfort in auditoriums. In addition, the students' own perception of the library also has an significant impact on their overall satisfaction with the facilities. (Hanssen & Solvoll, 2015). In this regard, it has been shown that the university libraries have begun to develop a more strategic approach to the management of physical vs. virtual learning spaces and formal vs. informal study spaces to support the university-wide-strategy (Matthews & Walton, 2014). For universities to enhance and support student satisfaction, first they must meet the needs of the modern student, and second, they need to understand that new learning and teaching methods require different and updated facilities (McLaughlin & Faulkner, 2012). How learning is being delivered has changed from a content-delivery to a knowledge-based model much thanks to the impact of technology. Modern students are demanding a IT-rich learning environment and flexible learnings spaces where they can adjust the way they learn: student- centred learning, collaborative learning, reflective learning and knowledge acquisition. (McLaughlin &

Faulkner, 2012). Furthermore, as learning models become more based on social interaction, self-regulated learning and the learner's autonomy, modern university facilities have a higher proportion of space for individual, informal and collaborative work, all this supported by a digital learning setting making learning processes more flexible. Informal learning settings are also much more spread throughout the university buildings and corridor spaces are used as meeting areas and for informal learning activities, as opposed to old university facilities that have a higher proportion of classrooms and corridor space just serves to circulation purposes. (Beckers, van der Voordt & Dewulf, 2015)

The assumptions that technology, digitalisation and collaborative work are factors that play a significant role for student satisfaction and learning is supported by McLaughlin and Faulkner (2012). In their study, they found that "students had little patience with learning areas that were not set up for technology" (McLaughlin & Faulkner, 2012: 145). Further, they found that the students' perception of lecture rooms was that they did not support nor encourage collaborative learning and discussion, but rather that the rows of desks and lecture podium promoted lecturer- dominated sessions and passivity. The results showed that students wanted to discuss ideas in more informal settings where they felt more comfortable and where facilities and the design encouraged peer-to-peer learning. If the student did not feel that learning occurred, they actively decided to not attend classes and rather study in, according to them, more suitable informal social environments such as cafes, corridors and outdoor places.

### **2.3 General challenges facing FM in HEIs**

Price et al. (2003) argues that one of the main challenges of FM is the strong focus on maintenance and at the same time claiming adding value to the core business of the organization. They further explain that FM's big task is to demonstrate its strategic value regarding the business success than just merely being a discipline of maintenance management. Further, Kamarazaly, Mbachu and Phipps (2013) claim that the nature of FM in university facilities and the role of a facility manager at those facilities constitute of complex processes due to the wide range of diversity among its stakeholders and their demands, as well as the diverse range of facilities that are part of the job. This, and the constantly increasing expectations and demands from society and stakeholders in addition to an ever-changing business setting, implicates a series of challenges for the management of university facilities (Kamarazaly, Mbachu & Phipps, 2013).

One big challenge for facility managers generally is inadequate funding, however, is mostly public organizations that face stringent budget constraints and should be provided with tools to assist them in decision making (Lavy, 2008). Having the necessary tools to manage facilities in an efficient way is critical to build a strong competitive advantage in the market as well as in the success of most organizations by being an avenue to achieve organization-wide-objectives (Kamarazaly, Mbachu & Phipps, 2013).

Kamarazaly, Mbachu and Phipps (2013) explored the current and future challenges facility managers might face in their job, and categorised the challenges from very high-risk (VH) to very low-risk (VL). The results showed that facility managers face both internal and external challenges. Nine current challenges in the very high-risk and the high-risk zone were identified as demonstrated in table 1 and table 2.



Internal challenge	Explanation of issue
Finance (VH)	Addressing insufficient capital, operational budgetary allocations and attracting enough funding.
Stakeholder needs (H)	Addressing changing and more complex needs and demands of stakeholders with a limited budget.
Maintenance (H)	Management of aging buildings and infrastructure, and choosing between “retain and maintain” vs. “upgrade or replace”.

**Table 1. Most critical current internal challenges**

*Source: Adapted from Kamarazaly, Mbachu and Phipps (2013, pp. 142-143)*

External challenge	Explanation of issue
Economic (VH)	Proactive management of micro- and macro-economic climates having disruptive effect on FM budgets and operations.
Sustainability/ environmental issues (VH)	Finding innovative and sustainable ways of managing energy consumption, waste, resource use and reduction of environmental footprint.
Technological (VH)	Management of rapid technological changes such as technical obsolescence, need to upgrade equipment and processes, funding of new technology to improve FM operations.
Regulatory/compliance (VH)	Acceptance of legislation, by-laws and standards affecting FM planning and operations. Management of high costs related to keeping up with regulatory changes and the associated risks and uncertainties.
Socio-cultural issues (H)	Assessing and responding to the different needs of a variety of users within the same building, using the same infrastructure.
Institutional (H)	Challenges regarding organisational politics; having different stakeholders in mind, and the lack of a representative from the FM department, as well as seeing FM as a cost rather than a mean of added value.

**Table 2. Most critical current external challenges**

*Source: Adapted from Kamarazaly, Mbachu and Phipps (2013, pp. 143-144)*

Future challenges facing facilities management and facilities managers in universities are very alike the current challenges, regarding both internal and external ones. Twelve future challenges were identified, nine of which lie in the very high-risk zone (VH). These nine challenges are: emergency management, statutory management, sustainability, technology, user needs assessment and satisfaction, cost-cutting, work environment, operational efficiency and optimised asset utilisation (Kamarazaly, Mbachu & Phipps, 2013). Measures for dealing with current and future challenges faced by FM are, as suggested by Kamarazaly, Mbachu and Phipps (2013): optimized asset utilization, demonstration of returns on investment, improving FM's strategic relevance, and investment in efficient technologies.

### **3. Method**

A literature search was conducted in HIOA's database Oria, as well as in research publisher Emerald. The search for relevant articles for this paper was based on keywords such as "university facilities", "facilities and high education", "university", "facility management university" and "facility management university facilities". Other articles were found through the bibliography on the articles found on the databases. Various journals were used to find articles for the literature review. However, Facilities as well as Journal of Facilities Management, were used as main journals for the search.

As the aim of this literature review was to examine how FM can contribute to the added value, what impacts student satisfaction, and to present issues university institutions face, the articles had to fulfil some criteria: they had to cover the topic of FM in universities or high education institutions, how FM might add value to the HEI/universities, new demands on universities/HEI, current FM practices and possible areas of improvement. There weren't any demands on the design of the articles, relevant articles could be just pure theoretical or case studies.

Limitations with this paper is first, the short time available and the magnitude of the assignment to make a more profound search of articles. Second, the assignment takes mainly on the perspective of students, not so much the perspective of university staff such as teachers and research, meaning that if it did, the results of this paper could be different. Thirdly, it was difficult to find literature taking on perspectives from students studying different courses or at different buildings, which could have also altered the results of this paper.

### **4. Discussion**

The general main challenge for FM at university facilities is the lack of financial funding. The root to this problem could be what Price (2013) call the paradox of facilities management. FM needs to focus more not only on promoting the maintenance aspect of the discipline, but also on promoting how FM brings added value to the organization/university. FM needs to better communicate that facilities are part of how students perceive the university and their learning, much thanks to the rapid development in technology and digitalization, but also that through maintenance and development of FM techniques and other resources FM can contribute to cost reduction. Cost reduction through better FM operations means in the long run that universities make available resources to other activities. If the university board does not understand the value that FM has on several aspects of HEI, funding will go somewhere else, as argued by Kamarazaly, Mbachu and Phipps (2013). Having poor funding, creates a new challenge for facility managers because they must get very creative and innovative (Kamarazaly & Mbachu, 2010, cited in Kamarazaly, Mbachu & Phipps, 2013) to still be able to perform the FM operations in an effective way to support the core business, making the FM job a lot harder and risking that the results are not as good as they could be with sufficient capital.

As presented by Kamarazaly, Mbachu and Phipps (2013) FM faces internal and external challenges. However, it is important to observe that most of the challenges in the very high-risk zone and in the high-risk zone are external challenges which the universities themselves can do very little or nothing about. That being said, the internal economic challenges can however be dealt with by having a FM representative in the university board who can bring light to issues that the university board is not aware of, and who can argue for the added value of FM to HEI. These assumptions are in line with the findings of Kamarazaly, Mbachu and Phipps (2013). Moreover, one could argue that another way FM can try to resolve monetary issues is by having a solid FM strategy and planning for their operations. Lavy (2008) suggests that FM needs to have a clear plan, benchmarking approach and a good internal communication. By having a concrete and clear FM approach, the FM department at universities might be able to work more proactive than reactive, leading to increasing the chances of cost reduction and

more efficient work. Having a clearer FM strategy involves also benchmarking and comparing results of FM operations between different periods. For instance, when benchmarking, FM departments have a chance of showing the university board the positive effects FM can have on energy consumption or waste management. Also, the usage of KPIs could be a great tool to track the performance of the FM operations. For example, regarding air quality and temperature in lecture rooms, which are important factors to student satisfaction, FM departments can use KPI to measure performance and make adjustments accordingly. Further, internal communication might improve if the work done is supported by and in line with a superior FM strategy aiming to communicate goals and results to workers throughout the FM department. All these aspects might impact how the university board sees FM operations, resulting in increased capital allocation for the FM department. Moreover, by having a clear FM strategy and course of action, the FM department will most likely be able to deal with future challenges and be able to make better use of the resources available.

Facility managers must also be aware of the connection between changes in the environment, student satisfaction, teaching and learning, and ways FM can help universities in fulfilling its users' needs and demands. First, it is crucial for facility managers and universities to understand that the development in technology and digitalisation has led to the universities no longer being used just a place for teaching and learning, but rather a place where students meet to socialize, learn and discuss. Most students nowadays have access to own computers, this puts pressure on staff in the sense that students want access to power point presentations, and digitalised and active learning through for example Kahoot-quizes and group work. In turn, these demands put also pressure on universities as they must provide teachers and students with the tools and equipment necessary to enable the usage of own computers and digitalised teaching and learning methods as well as collaborative work. Development in technology have led to more independent work, both individually and in group. As students wish to engage in more social meetings, peer-to-peer learning and self-study there is a need to make university facilities more flexible, meaning that the same facilities must be able to meet different demands from the students. This argument is in line with McLaughlin and Faulkner (2012) who indicates there is a big need of multi-spaces that fulfill demands in relation to technology, peers and more informal learning settings, and with Hanssen and Solvoll (2005) who argue that social areas should be a priority for university institutions. However, it is important to have in mind that in trying to satisfy student needs, the FM department will face challenges regarding different socio-cultural groups, as emphasised by Kamarazaly, Mbachu, and Phipps (2013). HEIs nowadays constitute of students from different social-, cultural- and religious groups, meaning that facilities managers have to take into account a range of different demands, thereby it is important to have an strategy on how to deal with these demands. For instance, a solution could be to involve the users in the design process when re-designing or building universities facilities, that way they will most likely develop a sense of ownership to and be more satisfied with the university facilities.

## **5. Conclusions**

This paper sought to explore how FM can contribute to added value to HEI, and to present new demands on universities facilities as well as challenges FM may face. The findings of this literature review suggest that facility management play a very important roll for student satisfaction and how the university is perceived. Students whose needs are fulfilled and feel satisfied with the university facilities will most likely help strengthen the university's image through word-of-mouth, which ultimately results in added value to the HEI. This way, FM can contribute to competitive advantage and marketability for the HEI. FM can also contribute to more efficient operation at the facilities, resulting in cost reduction. As funding is the biggest problem of FM departments at universities, it is important that each FM department develop a clear strategy to present to the university board to make them aware of the added value FM can bring to the institution. Moreover, in satisfying students' needs it is important to consider the variety of social and cultural groups making part of an university, FM must have a plan to deal with this challenge. However, a general need of today's students is the need of technology and social and informal spaces, a key job of a facility manager at HEI is therefor to create multi- spaces that enhance student engagement at the university and that encourage collaborative learning. Further research on university staff's perception of the facilities and the students' use of specific buildings needs to be done to acquire more profound knowledge on how FM can contribute to added value and which factors are significant for the users' satisfaction.

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# **The analysis of change management theories through implementing phase**

Camilla Mittet

Oslo and Akershus University College of Applied Sciences, Oslo Business School, Norway

E-mail: s306435@stud.hioa.no

## **Abstract**

The purpose of this paper is to get an overview on the subject change management, and to pinpoint important models and theories that can be used in organizations that faces changes. This paper discusses two change management methods, which are investigated more thoroughly, Lewin's "change as three-steps" method and Kotter's "eight-steps to transforming an organization". The change management literature can be divided in different areas with similar characteristics. Both methods, Lewin's and Kotter's, were discovered to have challenges. Lewin's model may seem too little complex, and Kotter's model may also not cover enough ground. By using Kotter's model as a guide, and complement the model with other theory from the change management field, it will increase the probability of a successful outcome of the implemented change.

**Keywords:** Change management, Organizational change, Organizational development, Business processes

## 1. Introduction

In this paper, the individual part of the exam in the course FM2100 Buildings, infrastructure and FM (Hard FM), I had a look at the subject change management. The exam was divided in two, one individual and one group assignment. In the group assignment, we proposed a new way of working, a new design of an office environment, for the tenants' present using the premises. One of the challenges we would face to implement these changes in their work environment, is that they very explicit told us they wanted cell offices. We came up with a combined solution where they would have individual assigned desks, but have certain activity based areas for different tasks. This design solution would demand a new way of working, new IT solutions, changing their daily routines and work processes.

The Norwegian standard NS-EN 15221-1 (2006) divide facility management in two categories: Room and infrastructure (Hard FM) and People and organization (Soft FM). Change management can be placed in the category *room and infrastructure* because it is dealing with *workplace* and the organization of a move process. Partly one can also argue for placing it in another sub category of room and infrastructure, *premises*, because refurbishment/ renovating and strategic room planning/ administration is involved.

Through this paper, I aim to get a broader view at how a facility manager can perform to get the employees to embrace a new change.

## 2. Theoretical background

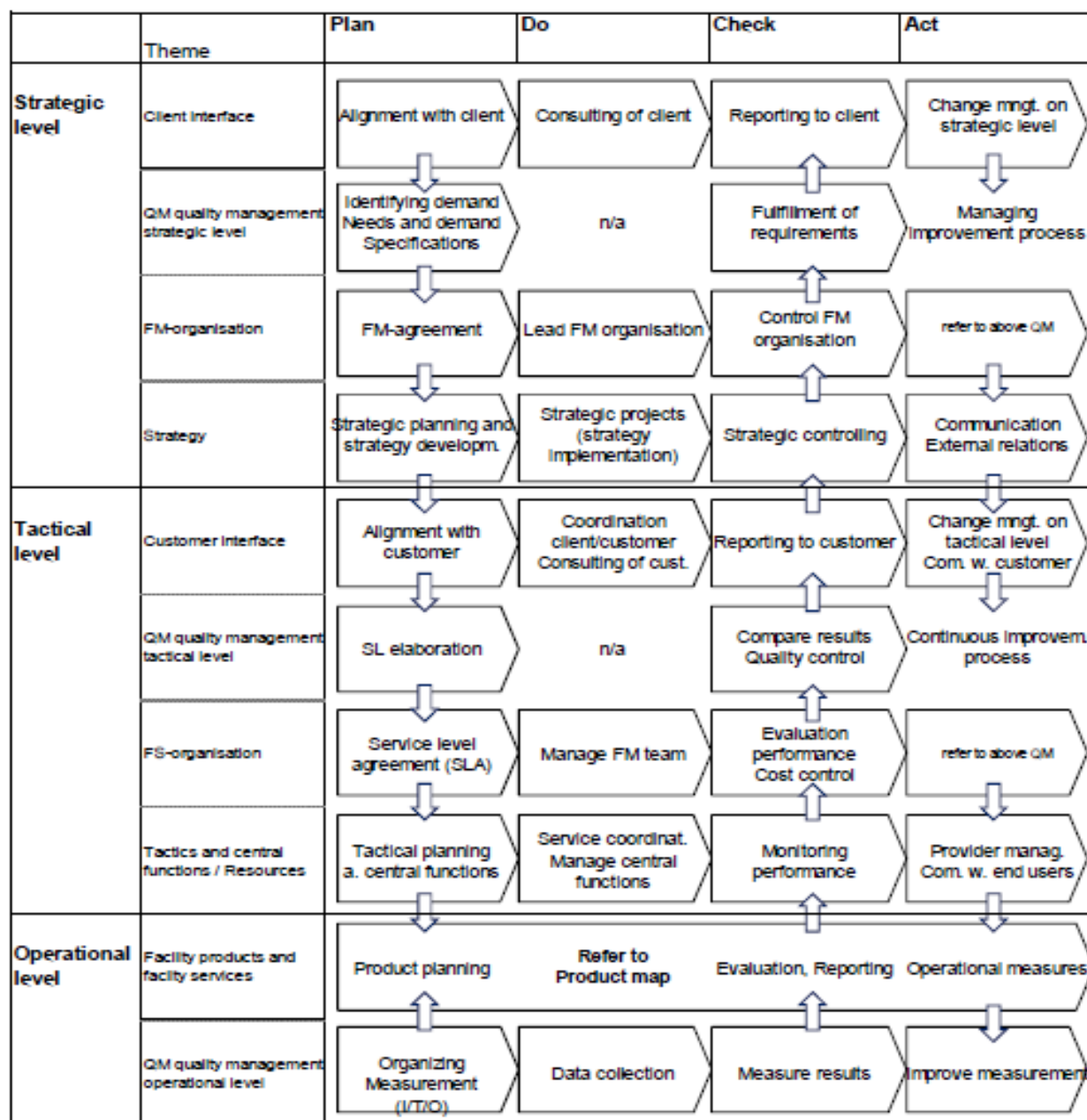
Change management is defined by the Oxford Dictionary of Business and Management as:

"A systematic approach to dealing with both planned and unplanned change in an organization. A major part of change management is dealing with the fear or resistance to change in the workforce. The best strategy for dealing with such resistance is usually one of communication, participation, encouragement, and support."

In the textbook *Total Facilities Management* by Atkin and Brooks (2009, 271) change management is defined as:

"The process, tools and techniques to manage the people side of business change to achieve a required outcome and to realise that change effectively within the social infrastructure of the workplace."

To place change management within the frame of the FM process matrix (Figure 1), we find change management both on the strategic and on the tactical level. The FM process matrix is an example on how to use a quality circle on facility management processes. The quality circle is described as Plan-Do-Check-Act (PDCA), change management is to be found in the act activity in the PDCA cycle (NS-EN 15221-4, 2011).



Example of a strictly theoretical FM process matrix using PDCA cycles on every level. From NS-EN 15221-4: 2011 page 71.

Several sources mention that change seems to always have been present, and that it's pace today is faster than ever. The technological development and the increased globalization are both factors that influence the rate of change in the society (Barrett and Baldry, 2003; Atkin and Brooks, 2009; Appelbaum et al., 2012). Al-Haddad and Kotnour (2015) have in the paper "Integrating the organizational change literature: a model for successful change" performed a literature review on the existing literature within the field of change management. The literature of change management can be divided in four main areas:

- *Change type* is the first area. It is a descriptive one that explains what kind of change it is, and what kind of qualities the change has.
- The second area covers *change enablers*. To increase the change success, change enablers can give the means to raise the success rate.
- The third area covers *change methods*; managers carry out actions to handle change. The field of change methods can be divided in two subcategories, *systematic change* and *change management*. Within systematic change they are identified eleven different methods. Some of the methods have well-known names such as Lean Thinking, Wheel method, Total Quality Management and Process Reengineering. In

the second subcategory, change management, there are at least six methods worth mentioning. There are Lewin's method, Judson method, Jick and Kanter method, Leading change method (Kotter, 2007), Luecke's method and Insurrection method. The change management methods are said to be more conceptual and have a broader view, than the systematic change models.

- The fourth and last of the categories is about *change outcomes*. An organization implements changes, the outcome of these changes can be described as consequences the organization must deal with (Al-Haddad, Kotnour, 2015).

Al-Haddad and Kotnour (2015) summarizes that there are many different opinions about change management. They emphasize that the probability of a successful outcome is different from one organization to the next. In short, they accentuate the importance of having a plan, discover critical factors, use a structured methodological approach, and the method used must be aligned with the organizational change type.

### **2.1 Lewin's three-step model**

Kurt Lewin is a frequently mentioned name in the change management literature (Appelbaum et al., 2012; Sikdar, Payyazhi, 2014; Al-Haddad, Kotnour, 2015; Meiner, 2016). Al-Haddad and Kotnour (2015) acknowledges Lewin to have started the research in change through studies in organizational development. His studies were focused on human behaviour, and is said to have inspired organizational development philosophies (planned change, behavioural science, change implementation and so on).

Lewin's method is referred to as a three-step philosophy (Barrett, Baldry, 2003; Sikdar, Payyazhi, 2014; Al-Haddad, Kotnour, 2015; Meiner, 2016). The steps are described as follows:

Step 1: *Unfreeze* the current state by getting the employees to come to terms with the change by implementing incentives.

Step 2: *Implement* the changes by using a proper leadership style.

Step 3: *Refreeze* the changes when they have reached the desired state.

In short: Unfreeze – Implement – Refreeze.

### **2.2 Kotter's eight steps to transforming your organization**

Kotter's eight-step model is often referred to in different literature about change management (Sikdar, Payyazhi, 2014; Al-Haddad, Kotnour, 2015; Meiner, 2016). John P. Kotter published in 1995 an article "Leading Change: Why Transformation Efforts Fail", which lead to the best-selling book, *Leading Change*, published in 1996. The article was published again over a decade later in Harvard Business Review (2007). Kotter acknowledges that change goes through a series of phases that normally requires a bigger amount of time. He also calls attention to that if failure happens in a phase, and if the failure is of a certain size, the impact can be devastating. Even people that normally is regarded as very capable are not excused from making mistakes. Kotter did in his own experience watch different organizations either make it or break it when trying to remake themselves as better competitors. From this knowledge, he pointed out eight critical mistakes (which basically is the antipode of the eight steps to create a successful change). From these mistakes, he founded the eight steps to transforming an organization:

Step 1: Establishing a sense of urgency (make today's situation seem more dangerous than the change alternative).

Step 2: Form a powerful coalition (do not underestimate the importance of teamwork).

Step 3: Create a vision (one should be able to explain the vision to someone in under five minutes, otherwise this step is not yet finished).

Step 4: Communicate the vision (using all communication channels to support the vision, and live the vision).

Step 5: Empower others to act (big obstacles must be removed to maintain credibility; the obstacles can be human or process).

Step 6: Generate short-term wins (pressure can be a force to help change and keep the urgency level up).

Step 7: Consolidating improvements and produce more change (set in motion bigger reengineering projects, successful change takes time).

Step 8: Institutionalizing the change (make the change a part of the organization's culture).

Kotter states that skipping one of the steps only leads to an illusion of speed, and does not generate the wanted outcome. In other words, the consecutive sequence should not be broken.



### 3. Method

This paper, about change management, is not to be regarded as a complete review over every aspect concerning change management. When I first decided to look further into change management I typed “change management” in Google Scholar, and got over 5 million hits. This indicates that change management is a huge and complex subject area. The method I wanted to use was literature study, it seemed to be a good way to deepen my understanding of the subject. When I got further into reading theory and understanding the size of this field of study, I decided to get an overall view and focus on a couple of models. I chose to go on with Lewin’s three-step model and with Kotter’s eight-step model for transforming an organization.

#### 3.1 Selection of theory and articles

Choosing literature was difficult. It is an enormous number of articles out there, so I looked to our syllabus in the different Facility Management courses to get hints about where to begin. I found a couple of chapters on change management, but not nearly enough to begin grasp the scope of change management. Secondly, I started searching Hioa’s library database and Google Scholar to find articles on change management. When I found articles that could be of use for my paper, I checked the Norwegian register for scientific publishing channels (NSD, 2017). The publishing channel would have to get rating 1 or 2 if I were to use the article. The journals *Interfaces*, *Journal of Organizational Change Management*, *Journal of Management Development*, *Harvard Business Review* and *Journal of Corporate Real Estate* all have the rating 1. *Human Relations* is the only journal I refer to with the rating 2.

#### 3.2 Limitations

There are several limitations with my paper. There is a strong degree of subjectivity when it comes to the selection of articles. The selection of change management, as a theme, is a result of personal flavour because I found the theme intriguing. If this were to be a bigger research paper it would be required to include and check the impact factor for each article used in the paper. It is most definite a limitation that the impact factor is not investigated. Change management can be viewed through the eyes of organization theory and psychology, and the management field (Meiner, 2016). I have mainly chosen the organizational perspective, and this is also to be regarded as a limitation.

I was not able to get access to Lewin’s article from 1947. It is stressed by the researchers, Cummings et al. (2016), that it is important to read the original sources.

### 4. Analysis/ discussion

#### 4.1 What about the legacy after Kurt Lewin?

Cummings et al. (2016) published a paper in *Human Relations* that questions Lewin’s three-step model’s significance. They argue for that Lewin never developed this model as we know it today, but that it developed after his death. They mention that Kurt Lewin is regarded as the founder of change management, and that his “Change as three steps” is regarded as the classic approach for change management (2016). In the paper, Cummings et al. (2016), emphasize that the foundation of change management has more to do with later researchers and theoreticians reworks, than with Lewin’s exact written words. The article Lewin wrote was published after his death, so going to the source was impossible even in the fifties. They also make a case out of the fact that no empirical evidence is provided to back the three-step model, this is compared to his other works rather unusual. Cummings et al. (2016) says that even though change as a three-step model is regarded to be one of Lewin’s most important works – it was not. Lewin’s model seems to have lived on its own and developed its own legacy (2016). In my opinion it is quite interesting that “the field is built on questionable foundations” (2016), and this is also a fact that it can be clever to keep in mind when looking at change management history.

The researchers point out that referring to Lewin’s work has been poorly executed (2016). What seems to be an interesting aspect is that it looks like few of the researchers who cite Lewin have read his exact words (Cummings et al., 2016). The three researchers discovered that Lewin never wrote refreeze, and that the word refreeze was introduced in a 1950 conference paper for the first time. The only word he wrote was unfreeze. This leads to the fact that Lewin only can be regarded as responsible for 33 percent of the “change as a three-step model” (2016).

Cummings et al. (2016) emphasize the importance of looking to the original sources, and not only rely on secondary quotations. They hope that the trend towards citing a greater number of references dating

near to present day, will move towards thinking in new ways in future studies in the field of management and human relations.

## **4.2 How valid is Kotter's eight-step model?**

### **4.3**

Over two decades has passed since John P. Kotter first presented his much recited eight step model for transformational change in organizations in 1995. The researchers, Appelbaum et al. (2012), presents a paper, with the aim to find arguments and counterarguments in the change management literature, to validate Kotter's classic change management model. In accordance with Appelbaum et al. (2012) hundreds of researchers refer to Kotter's publications on change management. Kotter's article did not refer to any outside sources, and this way it lacks the empirical foundation that research should be based on.

The research paper by Appelbaum et al. attempts to value each of Kotter's steps to check if more recent studies can support them or not.

Step 1: Urgency - here the researchers found support that step 1 still is significant (Appelbaum et al., 2012).

Step 2: Guiding coalition – There were highlighted some issues that should be regarded. One of the issues is that some situations need multiple guiding coalitions on multiple occasions. This is an aspect that Kotter does not promote. Another study Appelbaum et al. investigated, pointed out that change will not occur unless the staff in the most influential position adapted the desired behaviour. All together the second step still seems to be valid, even though there were issues to address in this step Appelbaum et al., 2012).

Step 3: Vision – It is much accepted in the research literature that it is very important to have a clear vision. Even so there are arguments for that the implementation is more important than the vision itself. This step also seems to be as significant as it was, or more significant, due to more recent studies (Appelbaum et al., 2012).

Step 4: Communicating the vision – One paper supported that staff were more positive to organizational change if they were pleased with management communication. The researchers found at least 9 studies that supported Kotter's view on the importance of communication. This step appears to still be of significant value (Appelbaum et al., 2012).

Step 5: Empowering – even a small amount of empowering of employees can help move the change process forwards. The researchers found step 5 to be valid (Appelbaum et al., 2012).

Step 6: Short-term wins – an implication to the aspect of short-term wins is to find the right balance between long-term effects of change on the staff, and the short-term advantages (Appelbaum et al., 2012).

Step 7: Produce more change and consolidating gains – The researchers found support for this step by interpreting more recent research, which stresses the importance of momentum. Momentum relates to Kotter's seventh step with the fact that even as the change is implemented, it still is necessary to change the processes and policies that does not support the vision (Kotter, 2007). Thus, the value of step 7 still seems to be significant (Appelbaum et al., 2012).

Step 8: Integrating the change – several of the studies the researchers included to illuminate this step supported the significance of step 8 (Appelbaum et al., 2012).

Kotter himself implied, through the statement “to make fundamental changes in how business is conducted to help cope with a new, more challenging market environment” (Appelbaum et al., 2012; Kotter, 2007), that his model not was applicable to all organizational changes. Appelbaum et al. provides us with some examples where the model might not be relevant without some alterations. They point out that *not all steps are relevant in all frames of reference*, with changes that not are reversible, step 7 and 8 can be argued not to be as relevant as in other settings. If the organization must deal with *difficulties*, such as the level of commitment to change, Kotter's model is not detailed enough to handle all kinds of

difficulties. Kotter's model is said by some to have a too *rigid approach*. Some studies propose that if Kotter's subsequent steps does not fit the culture they will have problems with the change.

In conclusion Appelbaum et al. (2012) points out that very few studies have tried to validate all eight steps together. The model is widespread, maybe because of its nature of being used based on what people feels to be true, rather than empirical research. It is important not to regard Kotter's eight step model as a guarantee for success. Every situation and organization is different, and in that sense, it is important to adjust the model to the given variables, and include other theories and models from the change management literature.

## 5. Conclusions

What I found out through working with this assignment, is that change management is a huge field of study. There are a lot of different approaches on the subject, and I think one should pick an approach that suites the organization and the change that is going to be implemented. Lewin's model may seem too little complex to have a widespread use in today's fast changing environment. What seems very important is to go to the original source, to read the exact words that has been written. In my case, that implies that I should try to get a hold of Lewin's original text, to read his words and make up my own opinion if he is to be considered as the father of the change management field. When it comes to Kotter's eight step model, and using it as a rule to implement changes in an organization, I would most certainly use it as my guide. If the change manager complements Kotter's model with other theory from the change management field, this would increase the probability for a successful outcome of the implemented change. This is following the conclusions Appelbaum et al. made (2012), and may be seen in the light of the article by Al-Haddad and Kotnour which highlights the different approaches to change (2015).

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# **The role of Navy of Kingdom of Yugoslavia in April war in the year 1941**

Slavko Curcic  
Svetislav Soskic  
Military Academy, Belgrad, Serbia  
E-mail: cacaksole@yahoo.com

## **Abstract**

In this scientific research we tried to show the role of Navy of Kingdom of Yugoslavia in April War in the year of 1941. All together with all the battles it participated for the preservation of territory and defence of civilians from aggression. Research bases on more individual events who marked that war and also the heroic deeds of comannding officers, non-commissioned officers and soldiers who did not step back even in front of more numerous enemy units. Methods we used are historic and research method from available literature. The aim of this research work is to break away from oblivion all heroic deeds done by units and individuals and to show that even if the defence of country was not so efficiently conducted, individuals somewhere made to inflict the damage to enemy and to slow it's advance into Yugoslav territory.

**Keywords:** April War, Kingdom of Yugoslavia, Navy, River Flotilla, Aleksandar Beric, destroyer Zagreb, the fall of the Kingdom of Yugoslavia

## 1. Introduction

The times in which our neighbours in the mid 20<sup>th</sup> century made a deal to share our territory between themselves after the aggression, with the plans of destroying our people and annihilation of our culture, have revealed true colours of the whole nation.

While some were openly sapping the system from inside even before the aggression, some were doing the same thing even when the war was on from April 6-18<sup>th</sup> 1941, but the group of men of honor decided to defend their country, their dignity and the oath given to the King and Fatherland. When the Axis forces, the strongest force back then, attacked Yugoslavia, major part of Yugoslav army was in disorder, but those who brought us honor were surely our brave army pilots who took off against Luftwaffe totally outnumbered, part of land forces who held their ground with dignity on some fronts, individual soldiers and officers who did not agree to surrender, killing their superiors who were surrendering the whole regiments to the Axis without battle, but also sailor soldiers who were, honorably fulfilling their duty to country at the ships, giving their lives at the Adriatic sea, and at the Danube.

Even today, we have an obligation to teach our younger colleagues about heroic deeds of lieutenants Sergej Masera and Milan Spasic on destroyer Zagreb in a worthy manner, lieutenant commander Aleksandar Beric and his sailors on a river monitor Drava, but also Commodore Mirko Pleiweiss and his quenching of Ustasas' rebellion in Crikvenica, and other members of Navy who did not spare their own lives for us Serbs so we can stand proudly today even many years after the April war. To keep memories of them alive, it is not enough just to remember their deeds, but led by their principles, we need to honorably fulfill our officers' and soldiers' duties and in case of need, to continue where they stopped. In order not to find more materials about our history in foreign literature than in our own, and to separate our first associations about the April war from defection, capitulation and breakdown, this work reminds us that there were always individuals in our nation, back then and also today, who did not raise their hands up and displayed the white flags, but bravely and honorably sailed to eternity while defending our infants and Fatherland. Their sacrifice must not be forgotten!

## 2. April war 1941.

When we say "April war" we are speaking about the part of World War II which was led by Nazi Germany and its allies against The Kingdom of Yugoslavia, from April 6<sup>th</sup> 1941, when the war in Yugoslavia started, to April 17<sup>th</sup> 1941, and capitulation of Yugoslavia, which happened because of demonstrations held on March 27<sup>th</sup>, against Cvetkovic-Macek government, who signed the membership of the Kingdom of Yugoslavia to Axis forces in Vienna on March 25<sup>th</sup>.

Revolted by the demonstrations and a clearly anti-nazi attitude of demonstrators, Adolf Hitler already decided on that March 27<sup>th</sup>, to "punish" not the entire Yugoslav nation, but Serbs, whom he held responsible for "treachery". German army was lead by Hitler's "Directive 25" which was the name of aggression plan for the Kingdom of Yugoslavia consisting of simultaneous attacks from Italy, Germany, Hungary, Romania, Bulgaria and the territory of Albania which Italian army also conducted attacks from. Yugoslav war plan "R-41", was adopted too late, just like its name says, in the year of 1941, and it was not elaborate enough, but even if it had been, it did not foresee disloyalty and mass desertion of officers and soldiers of Croatian nationality who contributed to the breakdown of the Kingdom a lot.

Attacks were launched it the night between April 5<sup>th</sup> and 6<sup>th</sup> around 10pm when the Special forces of German army took Sip channel on the Danube, while the first major devastation was in the capital city of Belgrade on April 6<sup>th</sup> in operation of German air force, Luftwaffe, called „Revenge“, when German fighter planes and bombers, without the previous declaration of war, started bombing civilian and military targets around 6.30am, even though Belgrade was declared an open city – without defences so it should be spared from devastation.

Hitler emphasized that the German people has no reason to fight against Croats and Slovenians and that he only wants to deal with those "Serbian traitors in Belgrade, who think that they can turn the Balkans over to British assassination of the world peace for the second time."<sup>58</sup>

From April 6<sup>th</sup>, enemy forces advanced incontinently towards Belgrade as their final goal, from directions Osijek-Vinkovci-Sremska Mitrovica-Belgrade, Timisoara-Vrsac-Pancevo-Belgrade and Sofia-Nis-Velika Morava valley-Belgrade, and, along with that, the direction that could be used for withdrawal

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<sup>58</sup> Terzic, V., Slom Kraljevine Jugoslavije. Belgrade-Ljubljana-Titograd (1983: 283-286).

towards Macedonia and Albania was cut off, and on April 10<sup>th</sup>, The Independent State of Croatia was declared in Zagreb. German minority in Yugoslavia, so called “Folksdoytcher“, played an important role in destroying the Kingdom's army from inside, giving away the positions to German army, or making sabotage such as occupation of the intact Zemun airport on April 12<sup>th</sup>. Late mobilisation, sabotage, „fifth column“, and other factors altogether resulted in the capitulation on April 17<sup>th</sup> in 2<sup>nd</sup> Army Headquarters in Belgrade, while the young king, ministers in the government and some high officers with their families left in emigration to London on April 14<sup>th</sup>, from which they did not return, many even after the war. The Kingdom of Yugoslavia was divided among the fascistic states, Hungary annexed areas: Backa, Prekomurje and Medjumurje, Germany occupied Banat, Central Serbia and all mines at Kosovo and Metohija and annexed part of Slovenia, Bulgaria annexed Eastern parts of Macedonia, Italian protectorate-Albania annexed Western Macedonia and Kosovo and Metohija and finally in the area of Croatia and Bosnia and Herzegovina, The Independent State of Croatia was created, abundant with work and death camps for Serbs, Jews, Gypsies and other disloyal Croats. A period of pogrom and mass execution of Serbs began, with two resistance movements and more sporadic actions against the occupation forces, which resulted in mass execution of civilians and hostages, such as well-known shooting of pupils in Sumarice, Kragujevac on October 21<sup>st</sup>, 1941.

### 3. The role and position of the Navy of Kingdom of Yugoslavia in the breakout of war

When Adolf Hitler came to power in Germany with his national-socialist idea, the country transformed from post-Versaille debtor, disrespecting or rewriting international post-war contracts, to an economic giant, which gave even more tail wind to rising ambitions of the German chancellor, later “Führer”. He created the “Tripartite Pact” on September 27<sup>th</sup> 1940. by “Berlin treaty” also signed by Italy and Japan, and the Kingdom of Yugoslavia was surrounded, except in the south, by this pact on March 1<sup>st</sup> 1941, when Bulgaria joined the pact, which was previously done by Hungary on 20<sup>th</sup> and Romania on 23<sup>rd</sup> November 1940. The army of the Kingdom of Yugoslavia was in stalemate. The old enemies from the World War I, started to secretly work on changing borders again, this time economically and militaristically stronger, and they also surrounded the country from three sides.

The Navy entered the war with vessels and weapons which were mostly post-war compensation from Austro-Hungary, which speaks enough about bad investments in this army branch. There were reforms in the Navy just before the breakout of war, and after the reform it consisted of 4 basic segments: Fleet, River Flotilla, Naval Coastal Command and Naval Air Force together with subsidiary segments: Navy command, Naval squad Zemun, Underwater weapons command, Naval scout command, Naval defence of Selce, Hydrographical institute, Naval hospital, Health resort Skrad, Artillery-technical Institute, Naval arsenal Tivat, Naval Military academy, Artillery school and Mechanical High School.<sup>59</sup> According to “R-41”, Yugoslav war plan, “Navy was given the task to defend the Adriatic coast, coordinate the land forces in attack on Zadar, and to lay mines in the river Danube”<sup>60</sup>. Foreseeing the danger of possible Tripartite Pact attack, Yugoslav army called reserve military personnel to exercises, though very late, and the order for the Navy and the River flotilla was written on February 18<sup>th</sup> 1941<sup>61</sup>, so the Navy entered the war with 742 active and 146 reserve commissioned officers and 10066 non-commissioned officers and soldiers.

Unit that calls to exercises	To be called to exercises	The day of entering the exercises	Note
Navy	4000 reserve commissioned officers and personnel by the decision of the commandant of Navy	One half each on days of March 10 <sup>th</sup> and 12 <sup>th</sup> 1941.	

Table 1. Clear map of Main Headquarters from 20.03.1941, with unit strength of Land Forces, Air Force, Navy and Border Troops from February 1<sup>st</sup> to March 20<sup>th</sup> 1941.<sup>62</sup>

<sup>59</sup> Antic, Spasojevic, Recna flotila 1915-2015. Belgrade (2016: 87-88)

<sup>60</sup> Miljanic et al., Vojna istorija udzbenik za vojne akademije, Belgrade (1980:165)

<sup>61</sup> Miletic, Zbornik dokumenata, Belgrade (1987:123)

<sup>62</sup> Miletic, Zbornik dokumenata, Belgrade (1987:124)

Majority of Yugoslav Navy commissioned officer corps were ex commissioned officers that served in Austro-Hungarian Navy, so the Navy commandant was Julian Leturotti (Italian) when the war broke out, and commandant of River Flotilla was Edgar Angeli (Croat) who on April 10<sup>th</sup> betrayed his subordinates and escaped with ship “Cer” to the newly formed Independent State of Croatia and put himself under its command. Orders to disembody and fight the enemy were not received during the whole April war, but sailors and naval pilots could just not wait to fight the enemy ships and planes. Naval Air Force pilots were giving air support with 3 hydroplanes Dornier Do-22 and 3 hydroplanes Rogozharski SIM XIV while the miner “Jastrebo” was landing a minefield in Budva port<sup>63</sup>. Also one pilot in a Dornier Do-22, while in reconnaissance flight, spotted a large Italian convoy crossing the Adriatic Sea. Despite the heavy anti-aircraft fire, he engaged them twice but without success, while on the same day, 3 Dornier Do-22 attacked the city of Durazzo but also without any success<sup>64</sup>.

To prevent a forming of a beachhead near Zadar, destroyer Beograd, 4 torpedo boats and 6 motor torpedo boats were dislocated to Sibenik, 80 kilometres from Zadar and prepared an attack which should have been coordinated by 12<sup>th</sup> Adriatic Infantry division and 2 combined squads of the Army of the Kingdom of Yugoslavia, who should have attacked from Benkovac with help of 81<sup>st</sup> bombing group. The attack started on April 9<sup>th</sup>, but the naval part of the attack failed, due to damaging of destroyer Beograd by an Italian aviation, and its later dislocation to the Bay of Kotor, because of damage repairation<sup>65</sup>.

Already on April 10<sup>th</sup>, 2<sup>nd</sup> Hydroplane command started to fall apart and a group of pilots flew over the Bay of Kotor to join the 3<sup>rd</sup> Hydroplane command. On the same day, one Dornier Do-22 attacked an Italian tanker near Italian harbour Bari and achieved a close miss, but it is considered that it made some severe damage.<sup>66</sup>

#### **4. Destroyer Zagreb, heroic deed of Milan Spasic and Sergej Masera**

Even though most of the warships were given as post-war compensation from Austro-Hungary, the Kingdom of Yugoslavia developed its own naval-military industry, which gave the greatest results on the eve of World War II. Destroyer Zagreb was launched on March 3<sup>rd</sup> 1938 from a shipyard in Split. It was a Beograd-class destroyer, which made an impact force of the Yugoslav Navy, together with destroyers Beograd and Ljubljana.

In the breakout of war, destroyer Zagreb was stationed in the Bay of Kotor, but without a permission to set sail. Because of that, it was an easy target for enemy planes and already on April 6<sup>th</sup>, it was attacked by 5 enemy planes out of which one was destroyed by an anti-aircraft fire from the ship.<sup>67</sup>

After the fights on the first day of war, Zagreb started manoeuvres trying to dislocate, and on April 7<sup>th</sup> on a pass from the Bay of Kotor to the Bay of Tivat, after the Verige gorge, destroyers Beograd and Zagreb were attacked at the same time by enemy aviation, and until their captivity and destruction, they shot down 6 enemy planes together.

After the first day of war and the first battle, Zagreb started manoeuvring and on April 7<sup>th</sup> on a path between the Bay of Kotor and the Bay of Tivat, after the Verige gorge, destroyers Beograd and Zagreb were attacked at the same time by enemy aviation and until the end of the war, they shot down 6 enemy planes together. After that fight, Zagreb was stationed in the Bay of Svete Trojice, and all the crews in the Bay of Kotor received an order not to damage their ships, to mark where they laid the minefields in the sea on maps, to wait for the Italian army and to surrender everything to them, and destroyer Zagreb received that order on April 17<sup>th</sup> at 1400 hours.

Commissioned officers on the ship, lieutenants Sergej Masera and Milan Spasic decided to disobey the order of abandoning the ship and told their superior to leave the ship because they would blow it up in the air, and they did so. They mined the ship and the fuse led all the way to munitions chamber. They went into legend together with the ship, choosing not to leave it even when the explosions started, showing the enemy that they will choose death rather than the white flag and captivity.

They were buried together on military graveyard in Savine, near Herceg Novi, even though the body of Sergej Masera was never found, except for a skull which is believed to be his, and it was buried in Ljubljana 1973. On a funeral in Savine, beside the locals, there were Italian officers showing their respect to the two heroes, and also showing fear from a local uprising. Milan Spasic and Sergej Masera

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<sup>63</sup> Shores et al., *Air war for Yugoslavia, Greece and Crete 1940-41*, London (1987:207)

<sup>64</sup> Shores et al., *Air war for Yugoslavia, Greece and Crete 1940-41*, London (1987:218)

<sup>65</sup> Whitely, *Destroyers of World War Two*, Maryland, USA (2001:312)

<sup>66</sup> Shores et al., *Air war for Yugoslavia, Greece and Crete 1940-41*, London (1987:220)

<sup>67</sup> Stamatovic, *Milan Spasic i Sergej Masera*, Belgrade (1985:33-34)

were decorated by 4<sup>th</sup> degree Karadjordje star decoration by the Yugoslav government in exile on January 27<sup>th</sup> 1942, and proclaimed “national heroes” by Josip Broz Tito on September 10<sup>th</sup> 1973, which makes them the only members of the Army of the Kingdom of Yugoslavia who were decorated by the Yugoslav government in exile and by the communist leader Josip Broz Tito. A film about them was made in 1938, called “Adriatic Sea on Fire”, whose scenario was written by Mesa Selimovic.

The rest of the Navy ships that were stationed on the Adriatic Sea were captured by Italian occupier and served them in naval battles and troop transport across the Adriatic and Mediterranean Sea.

## **5. The importance of the Danube for Germany and fights for prevalence**

Even before the World War II, Nazi Germany used the Danube for transporting huge quantities of oil from Romania upstream to their units. British intelligence agency noticed that and started to make a plan for its obstruction.

By the Berlin treaty decrees 52 and 57, the Danube was pronounced as a river of an international importance and all the Danube countries were given high obligations. For example, it was forbidden to build fortifications on a Djerdap gorge and Downstream Danube and sailing was forbidden for all kinds of warships. The only possibility was partial obstruction. The Danube should have been obstructed in the Djerdap gorge area, and that was the task of River Flotilla with the command in Novi Sad. River Flotilla tasked tugboats “Vitez” and “Kumanovo” with obstructing Djerdap gorge, as well as two locomotives which had a task to pull its wagons into the river.<sup>68</sup>

German intelligence agency somehow reached this plan and decided to prevent it from happening by using Special Forces. Tugboat “Kumanovo” managed to sink both of its scows in the Juc canal at 4 a.m. in the night between April 5<sup>th</sup> and 6<sup>th</sup> but the navigability of canal was decreased to 50% instead of the planned 100%, so it was still navigable. “Vitez” did not have any luck completing its mission because of heavy artillery fire which was opened from the opposite side of the Danube; “Vitez” also went on a mission at 4 a.m. in the night between April 5<sup>th</sup> and 6<sup>th</sup>, but the ship commandant did not know that the locomotives that should have pulled their wagons into the Danube were captured by the Germans and that was why he did not manage to make telephone contact with them. “Vitez” had to cross 9 kilometres to its goal under heavy artillery, machine-gun and anti-aircraft gun fire. Under heavy enemy fire, both scows disconnected from the “Vitez” but only one sank where it should have, leaving the mission half-fulfilled. As the tugboat was damaged and without adequate firepower to oppose the enemy, its commandant decided to sink it by crashing it onto the cliffs at full speed. Sailors did not have any luck because the stream changed the course of the ship and softened the impact. Second attempt with explosive also failed so the ship was finally sunk by sailors, who pierced its bottom by mattocks.<sup>69</sup> Tugboat “Vitez” or “R-27” sank and thus avoided captivity, unlike many other ships of the Kingdom of Yugoslavia.

In the Djerdap sector, the fate of about 20 civilian ships which were sunk by their owners because they did not want them to serve the enemy is also worth mentioning, as well as the ship „Drac“ which was in Romanian-Bulgarian waters at the moment of the breakout of the war, and which escaped and joined the Soviet Danube forces together with 16 cargo ships, which, even though they were not armed ships, did not serve the enemy as transporters of oil from Romania in their conquests.

## **6. River monitor Drava**

River monitor “Ens” was constructed in Linz in 1912. and it was crewed by 95 members: 5 commissioned officers, 33 non-commissioned officers and 57 soldiers.<sup>70</sup> The monitor was given to the Kingdom of Yugoslavia as a post-war compensation and its name was changed to “Drava” as a river that floats through Slovenia and Croatia.

War journey of “Drava” begins under the command of lieutenant commander Aleksandar Beric on April 2<sup>nd</sup>, when the entries to the ship rooms were dismantled and instead of them armoured covers were mounted, fence was also dismantled and machine-gun combat stations were mounted and manned on the deck and the monitor was stationed near the Hungarian border where it patrolled. As soon as the war started on April 6<sup>th</sup>, “Drava” was spotted by an enemy reconnaissance plane which came from Mohacs airfield, and since then, attacks intensified.

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<sup>68</sup> Paunovic, Djerdap i Timocka krajina, Zagreb (1970:698)

<sup>69</sup> Paunovic, Djerdap i Timocka krajina, Zagreb (1970:702)

<sup>70</sup> Antic, Spasojevic, Recna flotila 1915-2015. Belgrade (2016: 81-82)



Sailors on “Drava” paid their debt to Fatherland on April 11<sup>th</sup>, firstly in the morning when “Drava” supported transfer of land forces across the Danube from Batina to Bezdan, repelling the attacks of aviation, in which it shot down two enemy planes. When the enemy realised that “Drava” would not surrender easily, Hungarian fascistic forces sent four patrol boats in order to disable the transport across the Danube and to sink “Drava”. Not only did they fail with the mission, but “Drava” also destroyed two out of four patrol boats.

In the afternoon, ship commandant Beric decided to use the watchtower which he had established on the hill near Batina, and to bomb the Mohacs airfield in order to disable its function and prevent the planes from taking off from there. His plans were successful, and he made a serious damage to the enemy. Ship artillery fire started at 1600 hours and fired between 150 and 180 shells.<sup>71</sup> The attack succeeded and the planes did not take off from Mohacs airfield anymore.

Disorder in the country resulted in a disorder in the army, and that is the reason why Beric did not receive further orders. He decided to act by a previously arranged plan. The plan was to turn the ship around and to sail to Novi Sad and if the city had fallen to the enemy, the plan was to reach Fruska Gora mountain and to destroy the ship.

On its way to home port, “Drava” was seen once more on April 12<sup>th</sup> and it was its last sailing. This time, German “Stuka” dive bombers destroyed the ship in the third attempt. “Drava” sank at 8 o’clock on April 12<sup>th</sup> 1941, taking 75 young lives with itself together to the depths of the Danube, lives of the young sailors who gave their oath to their King, the oath they did not violate even in the moments of certain death. What makes the story about “Drava” special is the fact that the commandant of the ship, lieutenant commander Aleksandar Beric, though wounded, continued to fight the German planes and when the ship sank, he did not leave with few survivors, but at the moment of sinking, he was seen proudly standing and saluting the flag of his Fatherland, and that is why he should be mentioned together with the greatest Serbian warrior.

## 7. Conclusion

The army of the Kingdom of Yugoslavia experienced a quick breakdown. In that breakdown, the major role was played by Croatian minority as collaborators with the enemy, as, instead of fighting against the Germans, they welcomed fascists and Nazis as their liberators and thus showed their negation of origins but also a resistance to united Slavic country in the Balkans. Certainly, neglect of the army, due to small investments, obsolete technique and shortage of men due to badly conducted or late mobilisation have also played a significant role almost equally as a collaboration of Croats.

Of course, there were many heroes that should be role models for future generations, as they showed them how to proudly defend the country. Nobody will write about many of them because there was nobody to speak about their deeds, but immortal deeds of sailors of the Navy of the Kingdom of Yugoslavia, at least that part that decisively resisted the enemy, will be recorded forever in our rich history, side by side with the knights of Serbian race.

The significance of the Balkan Peninsula was great even back then, especially because Hitler needed oil from Romania which was transported to Germany across the Danube, and which he would get much faster if it was not for sailors of River Flotilla of the Kingdom of Yugoslavia who laid down minefields across the Danube, which, it is considered, delayed the attack on the Soviet Union because Hitler did not want to attack before he gained full access to oil supply routes, needed for his units.

Sailors on the Adriatic Sea, even though betrayed by their own command which was behaving occupation-friendly, showed the enemy that a Serbian soldier has something more valuable than his own life. The most valuable thing is the oath, and that value was set by Milos Obilic in Kosovo back in 1389, and almost the same oath was given by those young soldiers, this time to their King. Respect for lieutenants Milan Spasic and Sergej Masera who blew up the destroyer “Zagreb” and together with themselves, was shown also by Italian soldiers and officers who paid honour to them at the funeral, which was not the first nor last time that our enemies showed respect to our heroes. Finally it is up to us not to let their heroic deeds fall into oblivion.

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<sup>71</sup> Antic, Spasojevic, *Recna flotila 1915-2015*. Belgrade (2016: 92)

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# **Factors explaining building projects' success and failures**

Knut Boge

Oslo and Akershus University College of Applied Sciences, Oslo Business School, Norway

E-mail: knut.boge@hioa.no

Alenka Temeljotov Salaj

Norwegian University of Science and Technology, Norway

E-mail: alenka.temeljotov-salaj@ntnu.no

## **Abstract**

Do different categories of building owners' use different project models? Are the project models differentiated according to the buildings' character and type of building project? Are there connections between the buildings' total costs and type of contracts used? What are the most important reasons for choosing the particular project models? Are there any connections between the building owner's specific and measurable requirements and the building project's value creation for owners and users? Are there connections between project models; i.e. the combination of tender, contract and building contract, and the project's outcome? The present research is based on a cross-sectional large N observational design. Data were collected through a national online survey in Norway from June to September 2016 (N = 1034). The questionnaire was developed in cooperation with important stakeholders and pretested on various actors involved in building projects. The respondents (80 per cent men and 20 per cent women with an average of 15 years' professional experience) are representative for those involved in Norwegian commercial and public sector building projects. The data have been analysed with IBM SPSS version 23, mainly through descriptive statistics and cross table analysis. Different categories of building owner use different project models. Project models are differentiated according to the buildings' character and type of building project. There are connections between the buildings' character and total costs and the type of contracts used. There are connections between the building owner's specific and measurable requirements and the building project's value creation for owners and users. Finally, there are connections between project models and outcome. This is a large N survey among Norwegian public and private sector professionals involved in building projects. The results may have a slight success bias since more than 50 percent of the projects were reported to perform above average. Further research is needed, preferably similar studies in other countries to facilitate comparison across borders and cultures. The present research is one of few large N surveys among Norwegians in private and public sector organizations involved in building projects. The findings provide a first glance at factors explaining successes and failures in construction projects.

**Keywords:** Building projects, Organization, Owner governance, Success criteria

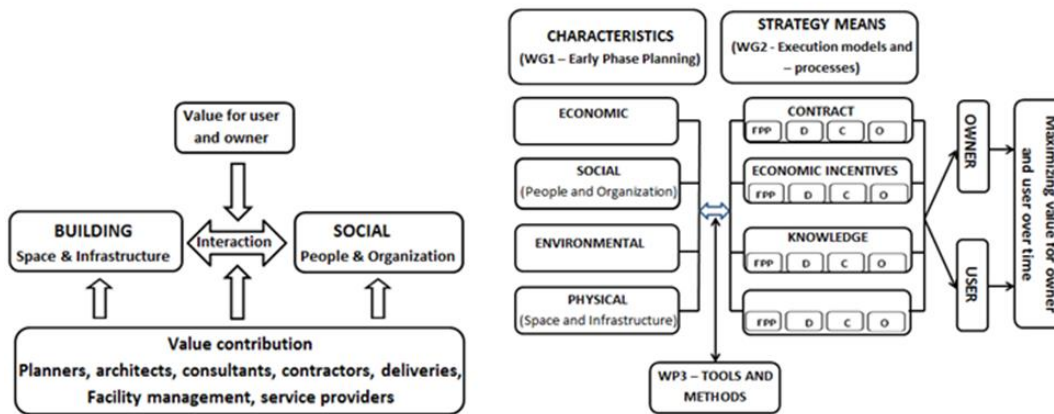
## 1. Introduction

This paper presents some initial findings from the research project Oscar. To get good, adaptable and usable buildings over time, there is a need for competent players with good decision and communication tools for projects and processes. Oscar is based on an assumption about clear connections between early phase planning and design and value creation for owners and users during the buildings' operational phase, and the aim is to develop knowledge, methods and tools that enable optimization of the building design given the owners and users' needs.

The Life Cycle Aspect is essential as input in early phase planning. In this way, buildings can contribute to good value creation during its lifetime – both for owners and users.

The left hand side of Figure 1 shows the research model, Oscar's Value Contribution Map, which is designed on the basis of EN15221 (CEN, 2006), the European FM standard. The model contains two headings, namely "space and infrastructure", and "people and organization". The value creation is understood as a result of the interaction between space and infrastructure and people and organization and value contributions from among others planners, architects, consultants, contractors, deliveries, Facility Managers and service providers.

**Figure 1: Oscar's Value Contribution Map**



The right hand side in Figure 1 shows Oscar's value contribution model, which in the early phase (WP 1) includes characteristics that can be divided into four dimensions, namely the economic, social, environmental and physical dimension. WP 2 includes the strategy means, which consist of contract, economic incentives, and knowledge, which interact with decisions made during early phase planning. EPP indicates Early Plan Phase, D indicates Detail Design Phase, C indicates Construction phase and O indicates Operational use of the buildings. WP 3 includes development of tools and methods to improve the interaction between the early phase and the construction phase.

## 2. LCC as a quality insurance for building owners and users

A necessary but not sufficient condition for a successful building project is that the finished building meets the users' needs, and provide a high degree of usability during the building's life cycle (Alexander, 2006). Development of buildings and work environments with a high degree of usability, and where environmental concerns, adaptability, etc. are addressed, require close cooperation between building owners and users during the entire life-cycle of a building or a campus of buildings, from idea to renovation or decommissioning (Häkkinen and Nuutinen, 2007).

Studies undertaken during Oscar WP1 about early phase planning of buildings found the most important aspects within the economic dimension are investment costs, the building's effect on core business, and energy costs. Building owners are more concerned about life cycle costs (LCC) than users. In the social dimension, the most important aspect during early phase planning is user involvement. In the environmental dimension, the most important aspects during early phase planning for building owners are energy efficiency. Building owners also emphasized use of renewable energy sources. In the physical dimension, the most important aspects are accessibility and universal design and areas use (logistics, etc.). However, flexibility (the possibility to change the building's floor plan, etc.), elasticity (the possibility to change the building's volume, use, etc.) and the building's generality (the possibility to

change the building's function and use) were less interesting during early phase planning (Boge and Temeljotov Salaj, 2016a; 2017). This last finding was somewhat surprising because building's flexibility, elasticity and generality are of great importance for the building's future value and value creation for owners as well as users (Bjørberg et al., 2016).

It is not only in Norway proponents of a life cycle cost (LCC) approach to buildings struggle. An evaluation of LCC practice in United Kingdom found that clients with short-term budgets and focus represent a significant obstacle against implementation of LCC mind-sets and practices (Higham et al., 2015). A building's LCC is partly determined during early phase planning and by choices made during the construction phase. Important factors decisive for a building's LCC are among others the building's technical systems, choice of materials, the building's degree of specialisation and the building's structure (Alqahtani and Whyte, 2016).

Aesthetics, maintainability and energy saving are important topics in discussions about choice of building materials, in order to maintain a building's sustainability, to minimize a building's environmental impact and to minimize the building's LCC (Akadiri and Olomolaiye, 2012). Several decisions of great importance for a building's sustainability and LCC are made during early phase planning and construction. However, a serious challenge for those who pursue LCC and sustainability is that high initial investments for those solutions that are most beneficial in the long run may lead to choice of solutions that are inferior concerning LCC and sustainability (Zuo et al., 2014).

Haddadi et al (2016) discussed that value is created when needs are fulfilled and strategic goals are achieved, which means that value creation in a building in a life cycle perspective depends mainly on factors 'fulfilment of the users needs' and 'fulfilment of owners and the corporate's strategy'. They presented a method that enables the project to move the focus on lifetime perspective, by starting the process early in the project and ensuring the value decisions (environmental, economic, physical and social) through the project timeline until its finish. In Canada, Herazo and Lizzaralde (2016) prepared a comprehensive stakeholder analysis during early project phases, and the mapping and examination of the evolution of sustainability approaches. They showed that sustainability approaches are dynamic and create tensions that significantly influence the initial project goals and the planning and design phases.

### **3. Project management and project models**

There are numerous studies of critical success factors (CSFs) in building projects. Low et al. (2014) made a comparative study of projects including new buildings and renovation and refurbishment of existing buildings in Singapore and divided these CSFs into pre-project factors, project management related factors, project team related factors, and external factors. Low et al.'s (2014) top ten list for CSFs in building projects were top management support, project planning and control, the building owner's involvement, cost management, the building owner's responsiveness, legislation, the project scope's clarity and the stakeholders' priorities, the project manager's competence, quality management and space management. A Swedish study of building projects identified a number of CSFs. The most important CSFs were the project's conformance with expectations, end-user satisfaction, the client or building owner's ability to make decisions, and the providers' workmanship (Frödel et al., 2008). In the research of Alias et al. (2014) focused on an identification of relationship between CFSs and project performance, they found five variables: project management action, project procedures, human factors, external issues and project related factors. Project procedure variable includes the procurement and tendering methods and strategies; project related factors includes project type, the nature and complexity of project and its size, and; external issue includes economic, social, political issue, physical and technology advance. Based on a survey, Hussein and Klakegg (2014) identified four risk factors that complicate projects, namely "failing to identify all success criteria due to lack of knowledge about stakeholders", "conflicting or competing criteria in order to accommodate the multiplicity and diversity of stakeholders", "use of optimistic or pessimistic targets in the formulation of success criteria", and "ambiguous/soft criteria that might be interpreted differently". Thus, vague or loosely formulated CSFs can in some instances have unintended effects.

Chan and Chan (2004) stated that project success means different things to different people, and that each industry, project team or individual has its own definition of success. They stated that owners, designers, consultants, contractors, as well as sub-contractors have their own project objectives and criteria for measuring success, and that definitions on project success depend on project type, size and sophistication, project participants and experience of owners. How to provide high quality buildings to owners and users? Chan and Tam (2000), who had a construction industry perspective, defined a building's quality as a combination of the building's fitness for its purpose, the main contractor's

achievement of the client or building owner's goals and the building's conformance to the client or building owner's requirements. Chan and Tam's (2000) recommended route to improving the client or building owner's satisfaction, was better project management, a more effective construction team leader, and increasing the client or building owner's emphasis on quality and time, particularly when the most important decisions are made. Hassen et al. (2011) proposed a model for categorizing project success from contractors' perspective. They concluded a building project is most successful when it is capable to integrate project management success dimension (adherence to quality, time and budget), product success (customer satisfaction, functional requirements and technical specification), and market success (revenue and profit, market share, reputation and competitive advantage).

Kubba (2012) stressed the most effective way to mitigate risk in a sustainable project is having a properly drafted contract. Lam et. al. (2007) designed a project success index (PSI) curve, measuring a project success, based on time, cost, quality and functionality KPIs of design-build projects. PSI indicated the success level of construction projects for benchmarking purposes, which could be used for different kind of projects' contracts. From the cost perspective, Olarinan (2015) emphasized that cost-based contractor selection can impact the success of project negatively. He suggested to take note of all attributes of the bidders' prospective contractors and how they can contribute to the overall achievement of the project's core objectives. To achieve more successful life cycle business model Nysten et al. (2010) proposed more creative and innovative contracts, flexible to market-based exchanges. Flexibility in a way to design contracting tools to suit to the business model in use. Based on findings they recommended that firms develop internal organizational contracting capabilities in order to use bilateral governance methods and learn to apply and combine hard and soft elements of contracting. Suprpto et al. (2016) studied collaborative contracts and contractual incentives influence on project performance. They did not find differences in project performance directly associated with different contract types and contractual incentives, but they mentioned that better project performance could be a result of relational attitudes through teamworking behavior.

Muller and Turner (2007) found that success against the measured success criteria can be achieved to a large extent by managing the importance of the underlying success criteria. From the relationship between success criteria and reported project success, they found that importance assigned to: team satisfaction impacts most of the success measures (overall success, meeting of user requirements, and self-defined criteria, satisfaction, of customer, end-user, team, and supplier); end-user satisfaction (meeting of user requirements and project purpose, reoccurring business, satisfaction of end-users and stakeholders); customer satisfaction (overall success, meeting of user requirements, and self defined criteria, customer satisfaction), and; reoccurring business (project purpose, and reoccurring business). Partnering and collaboration between building owners, users and those involved in development and construction of buildings have for years been a recognised route to better buildings. In a study of UK housing associations, Fortune and Setiawan (2005) identified two potential partnering alliances, namely on the demand and on the supply side. The main benefits from partnering, according to Fortune and Setiawan (2005), are among others improved predictability, reduced costs and waste, and increased innovation.

In a study of how to achieve successful public works and public private partnerships (PPP), Jacobson and Choi (2008) identified a number of critical factors, such as unified vision among those involved, commitment, open communication and trust, willingness to compromise and to collaborate, respect among those involved, community outreach, to provide something the community desire, and political support. Aarseth et al. (2016) pointed out the incentives provided by PPP contributing to value creation for owner and users of public schools. Findings from the case studies show that not so many incentives occur in practice, for example they found positive indications from the contractor considering LCC, but they stressed that user involvement was low. The main message given is that the payment mechanism is critical for the incentives and that inadequate contract specifications concerning take-over of the building at the end of the contract, have a significant conflict generating potential. We found very interesting explanatory research by Koops et al. (2016) with the focus on what public project managers who are actively involved in the project, consider as project success. Regardless the differences in project management culture in EU countries, 26 project managers with origin in all participating countries, who are united in the conventional project management perspective, they find that the most important criteria for success are deliveries on budget, time, quality and safety.

In a post occupancy workshop concerning the Open University's library building, the project team identified a number of success factors to be used as benchmarks in future projects. These were early user involvement, the consortium and its culture, tone, use of value and risk management, teambuilding, communication, and early involvement of design and build teams, early involvement of sub-contractors,

and continuous improvements (Hunt, 2008). Asiadu et al. (2016) identified several critical elements of cost overrun, such as an initial contract sum, initial duration, and gross floor area, type of tender (competitive tender and sole sourcing), contractor financial classification and number of stories (single). They suggested to include variables, such as project complexity, inflation, cash-flow pattern and project planning and management-related issues into a forecasting models. Similar, Famiyeh et al. (2017) identified the key factors causing construction time overrun, such as financial problems, unrealistic contract, durations imposed by clients, poorly defined project scope, client-initiated variations, under-estimation of, project cost by consultants, poor inspection/supervision of projects by consultants. Other mentioned factors were underestimation of project complexity by contractors, poor site management, inappropriate construction methods used by contractors and delays in the issuance of permits by government agencies (Famiyeh et al., 2017).

Introduction of lean construction has led to increased use of partnering or collaboration contracts in the construction industry (Heidemann and Gehbauer, 2011). Based on studies of a US and Australian case, Heidemann and Gehbauer (2011) found that cooperative design through use of cross-functional teams and implementation of holistic lean principles may increase the building projects' success rate. Early involvement of contractors may also increase the likelihood of success, because many contractors bring in expertise and knowledge about materials, construction methods and practice that may improve the designed building's buildability (Rahman and Alhassan, 2012).

Early involvement of Facilities Management (FM) teams with operations and maintenance staff in early phase planning and construction of buildings facilitate learning from experiences. Early involvement of FM teams may also facilitate anticipating potential obstacles when the building is taken over by the users. However, one obstacle against such learning is that Real Estate (RE) and Asset Management (AM) teams and FM teams often live separate lives (Wong et al., 2014). Wondimu et al. (2016) explored success factors for early contractor involvement in public infrastructure projects. The major early contractor involvement success factors are timing of application, proper compensation, trust, contractors' qualification, owners' competence, and risk distribution.

#### **4. Research questions**

This paper present results from Oscar's WP 2. The research questions are:

- Do different categories of building owners' use different project models?
- Are the project models differentiated according to the buildings' character and type of building project?
- Are there connections between the buildings' character and total costs and the type of contracts used?
- What are the most important reasons for choosing the particular project models?
- Are there any connections between the building owner's specific and measurable requirements and the building project's value creation for owners and users?
- Are there connections between project models; i.e. the combination of tender, contract and building contract, and the project's outcome?

#### **5. Methods**

The research design is a cross-sectional large N observational design (Gerring and Christenson, 2017, pp. 118-124), where the variation in the explanatory variables are analysed across units but not across time.

The data were collected through a national online survey in Norway from June to September 2016. The main channels for distributing the invitation to participate in the survey were business sector organizations such as Norwegian Building and Real Estate Association, the Architects' association, and the Consulting Engineer's association. Even employees in the organizations participating in Oscar's consortium, and several others received invitations. However, the vast majority of respondents are employed by other organisations than those participating in Oscar's research consortium. The respondents (N = 1034) are not a result of random sampling. It is thus not possible to generalize the results. However, the sample (80 per cent men and 20 per cent women, with an average of 15 years' professional experience) is representative for those involved in Norwegian commercial and public sector building projects.

The questionnaire was based on findings in Oscar's literature survey during the fall 2014, findings from Oscar WP1 survey about early phase planning undertaken in 2015, several workshops and meetings with the research consortium's partners during the second half of 2015 and early 2016, and

even some students' bachelor and master thesis written during the spring 2016. The questionnaire was developed together with important stakeholders. Draft versions of the questionnaire was pretested on various actors involved in building projects. Involvement of stakeholders and pretesting clearly improved the data's reliability.

The questionnaire consist of five sections, and section one, some of section two and four are of particular relevance for this paper. The questionnaire's first section was about the respondent, the project the respondent based her/his answers on and the respondent's role in this project. The questions were: Q1.1: The respondent's gender and year of birth. Q1.2: The respondent's education. Q1.2: The respondent's role in the project and number of years' experience in the role the answers are based on. Q1.4: Kind of project. Q1.5: The project's total costs included VAT. Q1.6: The building owner. Q1.7: The building project's nature. Q1.8: During which phase(s) was/were the respondent actively involved in the particular project. Q1.9: The project's categories of buildings. Q1.10: Whether the building is in use. Q1.11: Number of years the building has been in use. Q1.12: The project's type of tender. Q1.13: The project's type of main contract. Q1.14: The project's building contract. Q1.15: The main reasons for the project's choice of project model.

The questionnaire's second section was about the building owner's priorities in the particular project. Q2.1: To which value areas had the building owner established particular and measureable requirements for the project? The questionnaire's fourth section was about the respondent's experiences with the completed building in the use phase. Q4.3: The project's value creation for owners and users.

Most questions in the questionnaire's first section, except the questions about the respondents age (Q1.1), years of experience in the particular role (Q1.3), the building's years in use (Q1.11), and Q2.1 and Q4.3 in the questionnaire's second and fourth sections are categorical nominal level variables, and thus inherently qualitative.

The survey data have been analysed with IBM SPSS version 23. The most important analytical methods have been descriptive statistics (frequencies, tendencies, cross tabulations, etc.). Cross tabulations are very useful to investigate possible relationships between categorical data, or data that are not normal distributed. Pearson's chi-square ( $\chi^2$ ) test for independence is useful for testing whether there are relations between two or more variables with two or more categories in contingency tables. The chi-square test is based on comparing observed and expected frequencies, and the test's logic is:  $H_0$ : There is no relationship between the variables.  $H_1$ : There is a relationship between the variables. The chi-square test's critical value for the hypothesis is dependent of the degrees of freedom ( $df = (c-1) \times (r-1)$ ).  $H_0$  is rejected if the chi-square ( $\chi^2$ ) value exceeds the critical value (Aron, 2014, pp. 410-415).

The chi-square test is relatively robust, but there are two important assumptions or restrictions. The first is independence of observations, which mean that a test is "inappropriate if a person could produce responses that can be classified in more than one category or contribute more than one frequency count to a single category" (Gravetter and Wallnau, 2013, p. 615). The other restriction is that a chi-square test should not be performed if the expected frequency of any cell in a matrix is less than 5, because the chi-square statistic is sensitive to small expected frequencies. All other things equal, small expected frequencies in a chi-square test increase the risk for type I error, so-called false positive; i.e. rejecting a true  $H_0$  (Gravetter and Wallnau, 2013, pp. 244, 615-616).

The chi-square test of independence also provides useful effect measures. The first effect measure is the phi-coefficient ( $\phi$ ) for a 2x2 data matrix. The phi-coefficient is a correlation measure that vary between 0 and 1. A correlation of .10 is a small effect, a correlation of .30 is a medium effect and a correlation of .50 is a large effect. The phi-coefficient is calculated as  $\sqrt{\frac{\chi^2}{n}}$ . A squared phi-coefficient ( $\phi^2$ ) report the degree of explained variance, similarly as  $r^2$  (Gravetter and Wallnau, 2013, pp. 613-614). The other effect measure is Cramer's V (V), which is a modified version of the phi-coefficient for use when the matrix is larger than 2x2. Cramer's V is calculated as  $\sqrt{\frac{\chi^2}{n(df^*)}}$ , where  $df^*$  is the smallest value of the matrix'  $(r-1)$  or  $(c-1)$ . When the matrix is 2x2, Cramer's V is equal to the phi-coefficient (Gravetter and Wallnau, 2013, p.614). The effect size of Cramer's V is reduced when the size of  $df^*$  increases. When  $df^* = 1$  a small effect is .10, a medium effect is .30 and a large effect is .50, similarly as for the phi-coefficient. When  $df^* = 2$ , a small effect is .07, a medium effect is .21 and a large effect is .35. When  $df^* = 3$  a small effect is .06, a medium effect is .17 and a large effect is .29 (Cohen, 1988, p. 215 ff.).



## 4. Results

This section start with an introduction of the respondents and their roles and projects. The further structure is first a presentation of project models, thereafter the project owners' requirements, and finally the projects' outcome.

### The respondents

The 1034 respondents consists of 205 women (19.8 per cent) and 829 men (80.2 per cent). The respondents' mean age is 51.02 years. The minimum age is 25, and the maximum age is 96 years. The 25 percentile is 44 years, the 50 percentile and median age is 51 years. The 75 percentile is 59 years. The women's mean age is 46.6 years and their median age is 48. The men's mean age is 52.11 years and their median age is 53. The respondents' gender distribution and age is very similar to the findings in the 2015 survey made in the Oscar project's WP1 about early phase planning (Boge and Temeljotov Salaj, 2016b), but the 2016 WP2 survey has more respondents.

What about the respondents' education? 787 of the respondents (123 women and 664 men) have engineering educations. 260 respondents (56 women and 204 men) have educations in business administration. 100 respondents (38 women and 62 men) have educations in architecture. 57 respondents (18 women and 39 men) have education in finance, investment or law. 37 respondents (9 women and 28 men) have education in marketing and communication. 32 respondents (8 women and 24 men) have education in social science. Some of the respondents have two or more educations.

What were the respondents' roles in the project they have used as basis for their answers? Table 1 provide an overview of the respondents' roles sorted in diminishing order based on the total number of answers.

**TABLE 1: THE RESPONDENTS' ROLES IN THEIR PROJECT**

Role	Total (N)	Women (%)	Men (%)
The building owner's project manager	286	40 (14)	246 (86)
Consultant engineer	229	46 (20)	183 (80)
Building owner	208	26 (13)	182 (87)
Steward or building manager	105	17 (16)	88 (84)
Internal project manager	94	18 (19)	76 (81)
Project group manager	75	10 (13)	65 (87)
Construction manager	71	5 (7)	66 (93)
User	54	10 (19)	44 (81)
Construction contractor	46	3 (7)	43 (93)
Architects	44	16 (36)	28 (64)
Construction contractor's project manager	37	2 (5)	35 (95)
Internal or external provider of FM services	30	11 (37)	19 (63)
Technical contractor	18	2 (11)	16 (89)

Table 1 indicates the building and real estate industries are a men's world. Females are small minorities in most roles, except among architects and FM service providers. The respondents' average number of years in their role was 15 years. Minimum was 1 and maximum 70 years. The 25 percentile was 6 years, the 50 percentile or median was 13 years and the 75 percentile was 20 years. Thus, most respondents have significant practical experience in their roles.

What kind of building projects are the respondents' answers based on? 655 respondents (116 women and 539 men) answered a new building. 433 respondents (84 women and 349 men) answered refurbishment and renovation of existing buildings. 199 respondents (37 women and 162 men) answered extension or appendage of existing buildings. Thus, some of the projects included more than one activity.

The projects' total costs inclusive VAT were divided into three categories, namely 0-150 million NOK, 150-700 million NOK, more than 700 million NOK, and "Don't know". 1 Euro is currently 9.26 NOK. The total cost in most of the 879 projects are less than 150 million NOK (355 respondents or 40.4 per cent) and between 150 and 700 million NOK (311 respondents or 35.4 per cent). About one fifth of the projects (164 respondents or 18.7 per cent) have total costs above 700 million NOK. 49 respondents (5.6 per cent) do not know their projects' total cost. These findings indicate the respondents are representative for the current Norwegian construction market.

308 respondents (36.2 per cent) report the building owner in the project they have based their answers on is a private enterprise. 237 respondents (27.8 per cent) report the building owner is a municipality or county municipality. 165 respondents (19.4 per cent) report the building owner is a government body. 141 respondents (16.6 per cent) report the project owner is a publicly owned enterprise.

What kind of projects are the respondents involved in? 222 respondents report they answers are based on an ecstastically or unique signal building. 502 respondents' answers are based on a standard building with known solutions. 240 respondents' answers are based on a technically complex building. Some buildings, for instance signal buildings, may also be technically complex buildings.

The respondents have often been involved in more than one phase in the project their answers are based on. 451 respondents have been actively involved in the early phase. 636 respondents have been actively involved in the project planning phase. 594 respondents have been actively involved in the construction phase. 263 of the respondents have been actively involved in the operational/use phase. Thus, most respondents have been involved in the project planning and construction phases. These findings seem reasonable since Oscar's WP2 aims at the construction phase.

The projects the respondents have based their answers on include different categories of buildings.

**Table 2: Cross tabulation of the buildings in the respondents' projects and the buildings' nature**

<b>Building category</b>	<b>Total (N)</b>	<b>Signal buildings (%)</b>	<b>Standard buildings (%)</b>	<b>Technically complex buildings (%)</b>
Offices or business facilities	289	95 (33)	176 (61)	82 (28)
Primary or secondary schools	152	24 (16)	126 (83)	25 (16)
Housing	149	33 (22)	120 (81)	22 (15)
Facilities for assisted living	93	16 (17)	73 (79)	18 (19)
Cultural facilities	85	54 (64)	31 (36)	23 (27)
Universities or university college	78	32 (41)	26 (33)	36 (46)
Hospitals	73	11 (15)	32 (44)	52 (71)
Sports facilities	52	16 (31)	37 (71)	16 (31)
Prisons	4	2 (50)	1 (25)	2 (50)

Table 2 shows that offices or business facilities, primary and secondary schools and housing are the respondents' volume projects. There are considerable fewer prisons. Table 3 also show the distribution of these building categories as signal buildings, standard buildings and technically complex buildings. Please observe that the respondents could choose more than one category of buildings, signal buildings, standard buildings and technically complex buildings, because some projects include more than one category of buildings. The percentages for signal buildings, standard buildings and technically complex buildings have been calculated for each category of buildings, and may thus exceed 100 per cent. A ranking of percentages for signal buildings show that cultural facilities (64 per cent), prisons (50 per cent) and universities or university colleges (41 per cent) are the most common categories of signal buildings. A similar ranking for standard buildings show that primary or secondary schools (83 per cent), housing (81 per cent), facilities for assisted living (79 per cent), sports facilities (71 per cent) and offices or business facilities (61 per cent) are the most common categories of standard buildings. A similar analysis of technically complex buildings show that hospitals (71 per cent), prisons (50 per cent) and universities or university colleges (46 per cent) are the most common categories of technically complex buildings.

797 respondents reported about their buildings' use status. 500 buildings (62.7 per cent) were in use. 72 buildings (9.0 per cent) were partly in use, and 225 buildings (28.2 per cent) were not yet in use. Thus, almost two thirds of the answers are based on buildings in use, and the buildings' use time varies between 0 and 200 years. The mean time in use for these buildings are 7 years. Most buildings are rather new, because the 25 percentile is 1 year, the 50 percentile, median is 2 years, and the 75 percentile is 5 years.

## 5. Project models

A very relevant question is whether there are connections between project models; i.e. the combination of tender, contract and building contract, and the project's outcome. Other relevant questions are whether various categories of building owners' use different project models, and if the project models are differentiated, according to the buildings' character and type of building project.

574 respondents answered the questions concerning tender. 298 respondents (51.9 per cent) answered their project had been based on an open tender. 202 respondents (35.2 per cent) answered their project had been based on a closed tender where the candidates had been invited or been through a prequalification procedure. 74 respondents (12.9 per cent) answered their project was based on a direct order. In addition came 51 respondents who answered this question was not relevant for their role and 27 respondents who did not know.

582 respondents answered the questions concerning project contract. 354 respondents (60.8 per cent) answered their project was based on a fixed price contract. 122 respondents (21.0 per cent) answered their project was based on a time and materials contract. 47 respondents (8.1 per cent) answered their project was based on a fixed price contract with incentives. 46 respondents (7.9 per cent) answered their project was based on a target price contract with risk and gain sharing. Only 13 respondents (2.2 per cent) answered their project was based on a PPP or lease contract. PPP contracts have been much debated in Norway. In Norway, use of PPP contracts is very much a political and ideological issue, because some trade unions and left wing parties oppose PPP contracts while right wing parties, trade organisations and professional bodies often advocate PPP contracts. 51 respondents answered the contract question was not relevant for their role, and 14 respondents did not know.

590 respondents answered the questions concerning their project's building contract. 283 respondents (48.0 per cent) answered their project was a turnkey contract. 121 respondents (20.5 per cent) answered their project was a shared contract. 73 respondents (12.4 per cent) answered their project was a principal contract. 60 respondents (10.2 per cent) answered their project was based on a collaborating/interaction contract. 53 respondents (9.0 per cent) answered their project was based on a general contract. In addition came 54 respondents who answered they did not know or the question was not relevant for their position or role.

A cross-tabulation of the building owners' organisation and type of tender reveals some tendencies. Table 3 show these findings.

**Table 3: Cross tabulation of building owners and tenders**

			Tender			Total
			Open tender	Closed tender (invitation, prequalification)	Direct order	
The building owner's organisation	Municipality or county municipality	Count	123	35	4	162
		Expected Count	84,1	57,0	20,9	162,0
	Publicly owned enterprise	Count	60	28	4	92
		Expected Count	47,8	32,4	11,9	92,0
	Private enterprise	Count	52	113	63	228
		Expected Count	118,4	80,2	29,4	228,0
	Government	Count	63	26	3	92
		Expected Count	47,8	32,4	11,9	92,0
Total		Count	298	202	74	574
		Expected Count	298,0	202,0	74,0	574,0

Table 3 show the observed and expected frequencies for building owners and their use of tenders. Table 3 indicates a pattern, because the public administrations use far more open tenders than

expected and far less direct orders than expected. Private enterprises on the other hand use far less open tenders than expected and far more closed tenders and direct orders than expected. These differences are statistically significant according to Pearson's chi-square test of independence (df 6,  $\chi^2$  150.823, p .000) and with large and significant effect according to Cramer's V (.362, p .000). These differences are most likely a result of the laws and regulations governing public procurements, as well as habits and established practices.

Do the building's character influence the type of tenders? In case of signal buildings, there are only small differences between observed and expected frequencies. These differences are not statistically significant according to Pearson's chi-square test of independence (df 2,  $\chi^2$  2.174, p .337; Cramer's V .062, p .337). This is also the case for standard buildings with known solutions. Neither these differences between observed and expected frequencies are significant according to Pearson's chi-square test of independence (df 2,  $\chi^2$  3.580, p .167; Cramer's V .079, p .167). Even for technically complex buildings, there are small differences between observed and expected frequencies, and these differences are not significant according to Pearson's chi-square test of independence (df 2,  $\chi^2$  2.222, p .329; Cramer's V .062, p .329). Thus, there are strong indications of no differentiation of tenders according to the buildings' character.

In case of new buildings, the use of open tenders, closed tenders or direct orders are very similar to the expected frequencies. Thus, there are no significant differences according to Pearson's chi-square test of independence (df 2,  $\chi^2$  4.094, p .129; Cramer's V .084, p .129). That is also the case for refurbishment and renovation, according to Pearson's chi-square test of independence (df 2,  $\chi^2$  3.517, p .172; Cramer's V .078, p .172). However, in case of extensions and appendages of buildings, when compared to the expected frequencies there is a tendency to more use of open tenders and less use of closed tenders and particularly less use of direct orders. These differences are statistically significant according to Pearson's chi-square test of independence (df 2,  $\chi^2$  6.487, p .039; Cramer's V .106, p .039). Thus, the tenders seems partly differentiated according to type of building project, particularly in case of extensions and appendages where there is a weak but significant effect.

A cross-tabulation of the building owners' organisation and types of contracts also reveals some tendencies. Table 4 shows these findings.

**Table 4: Cross tabulation of building owners and contracts**

			Contract					Total
			Fixed price	Fixed price with incentives	PPP/Lease	Time and materials	Target price with risk and gain sharing	
The building owner's organisation	Municipality or county municipality	Count	116	5	5	26	13	165
		Expected Count	100,5	13,3	3,7	34,4	13,1	165,0
	Publicly owned enterprise	Count	55	7	1	20	7	90
		Expected Count	54,8	7,3	2,0	18,7	7,1	90,0
	Private enterprise	Count	130	27	6	42	24	229
		Expected Count	139,5	18,5	5,1	47,7	18,1	229,0
	Government	Count	53	8	1	33	2	97
		Expected Count	59,1	7,8	2,2	20,2	7,7	97,0
Total		Count	354	47	13	121	46	581
		Expected Count	354,0	47,0	13,0	121,0	46,0	581,0

Table 4 shows that municipalities and county municipalities use more fixed price contracts and far less fixed price contracts with incentives and time and materials contracts than expected. The municipalities and county municipalities also use somewhat more PPP/lease contracts than expected. Publicly owned enterprises behave almost as expected when it comes to contracts. Private enterprises use more fixed price contracts with incentives and target price contracts with gain sharing than expected. Private enterprises also use less time and materials contracts than expected. Government bodies use less fixed price contracts, PPP/lease contracts and target price contracts with gain sharing than expected, and

more time and materials contracts than expected. However, in this case it is not possible to use Pearson's chi-square test of independence because 3 cells (15 per cent) for the PPP/lease contracts have expected count less than 5. We therefore notice some promising patterns in the contingency table, but because of the three cells with expected frequency less than 5 we can't conclude with certainty. Even these differences are most likely a result of rules and regulations governing public procurement, but also most likely a result of habits and established practices. Private enterprises seem to be more inclined to use of incentive contracts than public administrations.

Do the buildings' character influence the type of contracts? In case of signal buildings, there are less use of fixed price contracts and PPP/lease contracts than expected, and more use of time and materials contracts and target price contracts with risk and gain sharing than expected. Even here it is not possible to use Pearson's chi-square test of independence, because one cell (10 per cent) in the PPP/lease contract column has less expected frequency than 5. However, we also here notice the pattern. In case of standard buildings, there are far more use of fixed price contracts and less use of the other contract types than expected, and these differences are also statistically significant according to Pearson's chi-square test of independence (df 4,  $\chi^2$  34.617, p .000; Cramer's V .244, p .000). In case of standard buildings and contracts, there is a significant and almost strong effect. In case of technically complex buildings, there are less use of fixed price and PPP/lease contracts than expected, and more than expected use of fixed price contracts with incentives, time and materials contracts and target price contracts with risk and gain sharing. But we cannot use Pearson's chi-square test of independence because one cell (10 per cent) in the PPP/lease contract column has expected frequency less than 5. Thus, the pattern seems to be that contracts are differentiated according to the buildings' character, but we cannot conclude with reasonable certainty except for standard buildings.

In case of new buildings, there is more fixed price contracts, fixed price contracts with incentives, PPP/lease contracts, and target price contracts with risk and gain sharing than expected, and fewer time and materials contracts than expected. Neither here can we use Pearson's chi-square test of independence because 1 cell (10 per cent) in the PPP/lease contract column has expected count less than 5. Thus, we observe differences, but we cannot conclude with certainty. In case of refurbishment and renovation, there is more fixed price contracts with incentives and time and materials contracts than expected and fewer fixed price, PPP/lease, and target price contracts with risk and rewards sharing than expected. Even these differences are significant according to Pearson's chi-square test of independence (df 4,  $\chi^2$  10.803, p .029; Cramer's V .136, p .029). Cramer's V here indicate a significant and almost medium strong effect. In case of extension and appendage of buildings, the frequencies for the various contract types are very similar to those expected except slightly more target price contracts with risk and rewards sharing. However, we cannot use Pearson's chi-square test of independence because one cell (10 per cent) in the PPP/lease contract column has expected count less than 5. Thus, the pattern seems to be that contracts for new buildings and refurbishment and renovation are differentiated according to type of building project, while differentiation of contracts for extensions and appendages of buildings seems to be less common.

A cross-tabulation of the building owners' organisation and type of building contract also reveals some interesting tendencies. Table 5 shows these findings.

**Table 5: Cross tabulation of building owners and building contracts**

			Building contract					Total
			Shared contract	General contract	Principal contract	Partnering/interaction contract	Turnkey contract	
The building owner's organisation	Municipality or county municipality	Count	34	14	16	22	82	168
		Expected Count	34,5	15,1	20,8	17,1	80,6	168,0
	Publicly owned enterprise	Count	25	11	19	9	31	95
		Expected Count	19,5	8,5	11,8	9,7	45,6	95,0
	Private enterprise	Count	31	5	28	23	141	228
		Expected Count	46,8	20,5	28,2	23,2	109,4	228,0
	Government	Count	31	23	10	6	29	99
		Expected Count	20,3	8,9	12,2	10,1	47,5	99,0
	Total	Count	121	53	73	60	283	590
		Expected Count	121,0	53,0	73,0	60,0	283,0	590,0

Table 5 show that municipalities and county municipalities use less principal contracts and more collaboration/interaction contracts than expected. Publicly owned enterprises use more shared contracts, general contracts and principal contracts than expected and far less turnkey contracts than expected. Private enterprises use less shared contracts and general contracts than expected and far more turnkey contracts than expected. Government bodies use more shared contracts, and general contracts than expected and less principal contracts, collaboration/interaction contracts and turnkey contracts than expected. Even these differences are statistically significant according to Pearson's chi-square test of independence (df 12,  $\chi^2$  77.504, p .000; Cramer's V .209, p .000). These differences, where there is a significant and almost large effect, are most likely a result of habits and traditions, and the fact that many public building owners are experienced builders and building owners. Many private enterprises outsource most of the building process to external providers.

Do the building projects' character influence the choice of building contracts? In case of signal buildings, there are more shared contracts, general contracts, and collaboration/interaction contracts than expected, while there are fewer principal and turnkey contracts than expected. These differences are statistically significant according to Pearson's chi-square test of independence (df 4,  $\chi^2$  11.487, p .022; Cramer's V .140, p .022), and Cramer's V indicates a significant medium effect. In case of standard buildings, there are more turnkey contracts and less shared contracts, general contracts, principal contracts and collaboration/interaction contracts than expected. Even these differences are statistically significant according to Pearson's chi-square test of independence (df 4,  $\chi^2$  16.574, p .002; Cramer's V .168, p .002). Even here, Cramer's V indicate a significant medium effect. In case of technically complex buildings, there are more shared contracts, general contracts, principal contracts and collaboration/interaction contracts than expected and fewer turnkey contracts. Even these differences are statistically significant according to Pearson's chi-square test of independence (df 4,  $\chi^2$  20.391, p .000; Cramer's V .186, p .000). Even here, Cramer's V indicate a significant medium effect. Thus, these findings indicate that building contracts are differentiated according to the building projects' character.

When it comes to new buildings, there are more shared contracts and turnkey contracts than expected, and fewer general contracts and principal contracts than expected, and these differences are statistically significant according to Pearson's chi-square test of independence (df 4,  $\chi^2$  30.192, p .000; Cramer's V .226, p .000). Cramer's V indicate a significant and almost strong effect. When it comes to refurbishment and renovation of buildings, there are more general contracts and principal contracts than expected, and less turnkey contracts than expected, and even these differences are statistically significant according to Pearson's chi-square test of independence (df 4,  $\chi^2$  17.431, p .002; Cramer's V .172, p .002). Even here, Cramer's V indicate a significant medium effect. When it comes to extensions and appendages of buildings, there are more shared and general contracts than expected, and less principal and turnkey contracts. However, these differences are not statistically significant according to Pearson's chi-square test of independence (df 4,  $\chi^2$  9.019, p .061; Cramer's V .124, p .061). Cramer's V indicate an almost medium but not significant effect. Thus, the patterns seems to be differentiation of building



contracts in case of new buildings, refurbishments, and renovations, but not in case of extensions and appendages.

Table 6 provides an overview of the projects' total costs and use of tenders.

**Table 6: Cross tabulation of the projects' total costs and tenders**

			Tender			Total
			Open tender	Closed tender (invitation, prequalification)	Direct order	
Total cost (inclusive VAT)	0-150 MNOK	Count	127	60	40	227
		Expected Count	117,9	80,4	28,7	227,0
	150-700 MNOK	Count	112	99	25	236
		Expected Count	122,6	83,6	29,8	236,0
	More than 700 MNOK	Count	53	40	6	99
		Expected Count	51,4	35,1	12,5	99,0
Total	Count	292	199	71	562	
	Expected Count	292,0	199,0	71,0	562,0	

Table 6 shows that projects with a total cost less than 150 million NOK have more open tenders and direct orders than expected, and less closed tenders than expected. The table similarly shows that for projects with a total cost between 150 and 700 million NOK there is more use of closed tenders and less use of open tenders and direct orders than expected. For projects with a total cost above 700 million NOK, there is more use of open and closed tenders and less use of direct orders than expected. These differences are statistically significant according to Pearson's chi-square test of independence (df 4,  $\chi^2$  19.011, p .001; Cramer's V .130, p .001). Cramer's V indicates a significant medium effect.

Table 7 shows a similar cross tabulation between the projects' total cost and choice of contract.

**Table 7: Cross tabulation of the projects' total costs and contracts**

			Contract					Total
			Fixed price	Fixed price with incentives	PPP/Lease	Time and materials	Target price with risk and gain sharing	
Total cost (inclusive VAT)	0-150 MNOK	Count	167	14	1	43	9	234
		Expected Count	143,7	19,5	5,4	46,4	19,1	234,0
	150-700 MNOK	Count	137	20	9	36	32	234
		Expected Count	143,7	19,5	5,4	46,4	19,1	234,0
	More than 700 MNOK	Count	43	13	3	33	5	97
		Expected Count	59,6	8,1	2,2	19,2	7,9	97,0
Total	Count	347	47	13	112	46	565	
	Expected Count	347,0	47,0	13,0	112,0	46,0	565,0	

Table 7 shows that projects with a total cost of less than 150 million NOK have a more than expected use of fixed price contracts and less than expected use of fixed price contracts with incentives, PPP/lease contracts, time and material contracts and target price contracts with risk and gain sharing. For projects with a total costs between 150 and 700 million NOK there are similarly more than expected use of fixed price contracts with incentives, PPP/lease contracts and target price contracts with risk and gain sharing, and less than expected use of fixed price contracts and time and material contracts. For projects with a total cost of more than 700 million NOK, there are more than expected use of fixed price contracts with incentives, PPP/lease contracts, and time and materials contracts. There are similarly less than expected use of fixed price contracts and target price contracts with risk and gain sharing. However, we cannot use Pearson's chi-square test of independence because one cell (6.7 per cent) in the PPP/lease contract column has expected frequency less than 5. Thus, table 7 provide indications of differentiation of contract types based on the projects' total cost and the different categories of contracts' relative transaction costs, but we cannot conclude with certainty.

Table 8 shows a similar cross tabulation for the projects' total cost and building contract.

**Table 8: Cross tabulation of the projects' total cost and building contracts**

			Building contract					Total
			Shared contract	General contract	Principal contract	Partnering/i nteraction contract	Turnkey contract	
Total cost (inclusive VAT)	0-150 MNOK	Count	51	21	36	12	108	228
		Expected Count	48,1	19,9	29,0	22,2	108,8	228,0
	150-700 MNOK	Count	31	12	23	41	137	244
		Expected Count	51,4	21,3	31,0	23,8	116,5	244,0
	More than 700 MNOK	Count	39	17	14	3	29	102
		Expected Count	21,5	8,9	13,0	10,0	48,7	102,0
Total	Count	121	50	73	56	274	574	
	Expected Count	121,0	50,0	73,0	56,0	274,0	574,0	

Table 8 shows that in projects with a total cost less than 150 million NOK, there is more than expected use of shared contracts and principal contracts, and less than expected use of collaboration/interaction contracts. The table similarly shows that in projects with a total cost between 150 and 700 million NOK, there are more collaboration/interaction and turnkey contracts than expected and less than expected use of shared, general and principal contracts. For projects with a total cost of



more than 700 million NOK, there are more than expected use of shared, general and principal contracts, and less than expected use of collaboration/interaction and turnkey contracts. These differences are statistically significant according to Pearson's chi-square test of independence (df 8,  $\chi^2$  71.477, p .000; Cramer's V .250, p .000). Cramer's V indicate a large and significant effect. Thus, Table 8 provide evidence that building contracts are differentiated according to the projects' total costs and the different building contract categories' relative transaction costs.

What are the most important reasons for choosing the particular project models? 87 of 167 respondents (52.1 per cent) answered the building owner's need for a predictable investment budget. 76 of 167 respondents (45.5 per cent) answered the building owner's experience, and 76 of 167 respondents (45.5 per cent) also answered the building owner's former experience with similar building contracts. 66 of 167 respondents (39.5 per cent) answered the building owner's own competency. 52 of 167 respondents (31.1 per cent) answered the building owner's capacity/availability of personnel. 48 of 167 respondents (28.7 per cent) answered right quality of the finished building and possible to follow up functional requirements. 31 of 167 respondents (18.6 per cent) answered need for incentives to secure value for owners and users. 24 of 167 respondents (14.4 per cent) answered the market situation. 21 of 167 respondents (12.6 per cent) answered the building owner's willingness to exposure to economic risk. 14 of 167 respondents (8.4 per cent) answered predictable operational costs during the operational phase. 10 of 167 respondents (6.0 per cent) answered the financing scheme. Thus, the top five reasons for choosing the particular project model are first the building owner's need for a predictable investment budget, second the building owner's experience and the building owner's former experience with similar building contracts, fourth the building owner's own competency and finally the building owner's capacity/availability of personnel. These are highly rational reasons for choosing project model.

## **6. The building owners' requirements**

In which areas did the building owners establish specific and measurable requirements for their building projects? 459 of 732 respondents (62.7 per cent) answered investments/project costs. 413 of 732 respondents (56.4 per cent) answered building erection time. 381 of 732 respondents (52.0 per cent) answered energy consumption. 314 of 732 respondents (42.9 per cent) answered architecture. 287 of 732 respondents (39.2 per cent) answered adaptable building. Even 287 of 732 respondents (39.2 per cent) answered organizing for optimal operations of the core business. 249 of 732 respondents (34.0 per cent) answered economy during the use phase (LCC, etc.). 211 of 732 respondents (28.8 per cent) answered environmental concerns (BREEAM classification, etc.). 208 of 732 respondents (28.4 per cent) answered aesthetics, and 116 of 732 respondents (15.8 per cent) answered tenant costs (lease and operational costs).

Thus, the building owners' top five requirements for their buildings according to the respondents in Oscar's WP2 survey are firstly investments/project costs, secondly building erection time, thirdly energy consumption, fourthly architecture, and finally adaptable buildings and organizing for optimal operations of the core business. Economy during the use phase (LCC, etc.), environmental concerns (BREEAM classification, etc.), aesthetics, and tenant costs (lease and operational costs) are somewhat less important. Adaptable buildings and organizing for optimal operations for the core business are of significant importance for a building's usability. That is also the case for economy during the use phase (LCC), environmental concerns and tenant costs.

## **7. Project outcomes**

Are there any connections between the buildings' character, projects, project models and project outcomes and between owner requirements and project outcomes?

Signal buildings provide more than expected better than average value creation for owner and users, and less than expected average value creation for owners. These differences are statistically significant according to Pearson's chi-square test of independence (df 2,  $\chi^2$  18.618, p .000; Cramer's V .177, p .000). Cramer's V indicate a significant almost medium effect.

Standard buildings provide more than expected average and less than average value creation for owner and users, and less than expected better than average value creation for owner and users. These differences are statistically significant according to Pearson's chi-square test of independence (df 2,  $\chi^2$  40.344, p .000; Cramer's V .260, p .000). Cramer's V indicates a significant medium effect.

Technically complex buildings provide more than expected better than average or less than average value creation for owners and users, and less than expected average value creation for owner and

users. These differences are statistically significant according to Pearson's chi-square test of independence (df 2,  $\chi^2$  29.207, p .000; Cramer's V .221, p .000). Even in the case of technically complicated buildings, Cramer's V indicate a significant medium effect.

Thus, signal buildings, standard buildings and technically complicated buildings have different value creation patterns for owners and users.

Table 9 show the connections between tenders and the building projects' value creation for owner and users.

**Table 9: Cross tabulation of tenders and the building project's value creation for owners and users**

			The described project's value creation for owner and users			Total
			Less than average	Average - common practice	Better than average	
Tender	Open tender	Count	10	102	113	225
		Expected Count	7,5	94,9	122,7	225,0
	Closed tender (invitation, etc)	Count	2	68	97	167
		Expected Count	5,5	70,4	91,1	167,0
	Direct order	Count	3	21	37	61
		Expected Count	2,0	25,7	33,3	61,0
Total	Count	15	191	247	453	
	Expected Count	15,0	191,0	247,0	453,0	

Table 9 show that open tenders provide more average value creation than expected, and that closed tenders and direct orders provide more of better than average value creation than expected. However, we cannot use Pearson's chi-square test of independence because one of the cells in the less than average column has an expected frequency less than 5. But there seems to be a pattern.

Table 10 show the connections between contracts and the building projects' value creation for owner and users.

**Table 10: Cross tabulation of contracts and the building project's value creation for owners and users**

			The described project's value creation for owner and users			Total
			Less than average	Average - common practice	Better than average	
Contract	Fixed price	Count	13	131	137	281
		Expected Count	10,5	122,2	148,3	281,0
	Fixed price with incentives	Count	1	13	23	37
		Expected Count	1,4	16,1	19,5	37,0
	PPP/Lease	Count	1	2	5	8
		Expected Count	,3	3,5	4,2	8,0
	Time and materials	Count	2	41	44	87
		Expected Count	3,3	37,8	45,9	87,0
	Target price with risk and gain sharing	Count	0	10	30	40
		Expected Count	1,5	17,4	21,1	40,0
	Total	Count	17	197	239	453
		Expected Count	17,0	197,0	239,0	453,0

Table 10 show that fixed price contracts provide more than expected less than average and average value creation and less than expected better than average value creation. Fixed price contracts with incentives provide more than expected better than average value creation. Time and materials contracts provide more than expected average value creation. Target price contracts with risk and gain sharing provide more than expected better than average value creation. However, we cannot use Pearson's chi-square test of independence because 6 cells (40 per cent) have expected count less than 5. However, there seems to be some patterns.

Table 11 show the connections between building contracts and the building projects' value creation for owner and users.

**Table 11: Cross tabulation of building contracts and the building project's value creation for owners and users**

			The described project's value creation for owner and users			Total
			Less than average	Average - common practice	Better than average	
Building contract	Shared contract	Count	5	39	55	99
		Expected Count	3,8	41,9	53,3	99,0
	General contract	Count	2	27	11	40
		Expected Count	1,5	16,9	21,5	40,0
	Principal contract	Count	4	29	24	57
		Expected Count	2,2	24,1	30,7	57,0
	Partnering/interaction contract	Count	1	10	38	49
		Expected Count	1,9	20,7	26,4	49,0
	Turnkey contract	Count	6	92	123	221
		Expected Count	8,5	93,4	119,0	221,0
	Total	Count	18	197	251	466
		Expected Count	18,0	197,0	251,0	466,0

Table 11 shows that shared contracts provide slightly more than expected less than average, and better than average value creation most of the time. General contracts provide more than expected average value creation and less than expected better than average value creation. Principal contracts provide more than expected less than average value creation and more than expected average value creation and less than expected better than average value creation. Collaboration/interaction contracts provide more than expected better than average value creation and less than expected average and less than average value creation. Turnkey contracts provide more than expected better than average value creation and even less than expected average and less than average value creation. However, we cannot use Pearson's chi-square test of independence because 4 cells (26.7 per cent) have expected count less than 5. Nevertheless, there are some indications of patterns.

Table 9, 10 and 11 show that building contracts are most important for the building projects' value creation for owners and users. Table 11 also show that collaboration/interaction contracts may have a significant value creation potential if utilized in the right kind of building projects, even if the expected frequencies in Table 11 indicates need for some caution.

Are there any connections between the building owner's specific and measurable requirements and the building project's value creation for owners and users?

There is a statistically significant connection between the building owners' requirements for investment/project cost and the finished building's value creation for owners and users according to Pearson's chi-square test of independence (df 2,  $\chi^2$  6.984, p .030; Cramer's V .108, p .030). Cramer's V indicate a small but significant effect.

There is no connection between the building owners' requirements for building erection time and the finished building's value creation for owners and users (df 2,  $\chi^2$  .014, p .993; Cramer's V .005, p .993).

There is a statistically significant connection between the building owners' requirements for energy consumption and the finished building's value creation for owners and users (df 2,  $\chi^2$  21.497, p .000; Cramer's V .190, p .000). Cramer's V indicate a medium significant effect.

There is a statistically significant connection between the building owners' requirements for architecture and the finished building's value creation for owners and users (df 2,  $\chi^2$  13.669, p .001; Cramer's V .151, p .001). Cramer's V indicate a near medium significant effect.

There is a statistically significant connection between the building owners' requirements for adaptable building and the finished building's value creation for owners and users (df 2,  $\chi^2$  8.468, p .014; Cramer's V .119, p .014). Cramer's V indicate a somewhere between small and medium significant effect.

There is a weak connection between the building owners' requirements for optimal operations of the core business and the finished building's value creation for owners and users (df 2,  $\chi^2$  5.059, p .080; Cramer's V .092, p .080). Cramer's V indicate a small but insignificant effect.

There is a statistically significant connection between the building owners' requirements for economy during the use phase (LCC, etc.) and the finished building's value creation for owners and users (df 2,  $\chi^2$  10.512, p .005; Cramer's V .133, p .005). Cramer's V indicate a significant somewhere between small and medium effect.

There is a statistically significant connection between the building owners' requirements for environmental concerns (BREEAM, etc.) and the finished building's value creation for owners and users (df 2,  $\chi^2$  21.568, p .000; Cramer's V .190, p .000). Cramer's V indicate a significant medium effect.

There is a statistically significant connection between the building owners' requirements for aesthetics and the finished building's value creation for owners and users (df 2,  $\chi^2$  6.500, p .039; Cramer's V .104, p .039). Cramer's V indicate a significant small effect.

However, there is no connection between the building owners' requirements for tenant costs (lease and operational costs) and the finished building's value creation for owners and users according to Pearson's chi-square test of independence (df 2,  $\chi^2$  3.236, p .198; Cramer's V .074, p .198), even if Cramer's V indicate a small but insignificant effect.

## 8. Discussion

### Main findings

#### 1. *Do different categories of building owners' use different project models?*

Public administrations seem to prefer open tenders to direct orders. Private enterprises use less open and more closed tenders. These differences are statistically significant and most likely a result of the laws and regulations governing public procurements, as well as habits and established practices.

Municipalities and county municipalities prefer fixed price contracts, and PPP/lease contracts. Private enterprises use more fixed price contracts with incentives and target price contracts with gain sharing. Government bodies use more time and materials contracts and less fixed price contracts, PPP/lease contracts and target price contracts with gain sharing. However, these differences have not been possible to test with Pearson's chi-square test. The observed differences are most likely a result of rules and regulations governing public procurement, and habits and established practices.

Municipalities and county municipalities use less principal contracts and more collaboration/interaction contracts. Publicly owned enterprises use more shared contracts, general contracts and principal contracts and far less turnkey contracts. Private enterprises use less shared contracts and general contracts and far more turnkey contracts. Government bodies use more shared contracts, and general contracts and less principal contracts, collaboration/interaction contracts and turnkey contracts. These differences are statistically significant. Many private enterprises outsource most of their building processes to external providers.

## *2. Are the project models differentiated according to the buildings' character and type of building project?*

There are no statistically significant indications of differentiation of tenders between signal buildings, standard buildings or technically complex buildings.

In case of new buildings, refurbishment and renovations, there are no statistically significant indications of differentiation of tenders. However, there are significant indications of differentiation of tenders in case of extensions and appendages. Thus, tenders seem partly differentiated according to type of building project, particularly in case of extensions and appendages.

For signal buildings, there is less use of fixed price contracts and PPP/lease contracts, and more use of time and materials contracts, and target price contracts with risk and gain sharing. For standard buildings, there are far more use of fixed price contracts and less use of the other contract types, and these differences are statistically significant. There are less use of fixed price and PPP/lease contracts for technically complex buildings, and more use of fixed price contracts with incentives, time and materials contracts and target price contracts with risk and gain sharing. However, these differences are not possible to test with Pearson's chi-square test.

For new buildings, there are more fixed price contracts, fixed price contracts with incentives, PPP/lease contracts, and target price contracts with risk and gain sharing than expected, and fewer time and materials contracts. However, these differences are not possible to test with Pearson's chi-square test of independence.

Refurbishment and renovation use more than expected fixed price contracts with incentives and time and materials contracts, and fewer fixed price, PPP/lease, and target price contracts with risk and rewards sharing. These differences are statistically significant. In case of extension and appendage of buildings, the frequencies are not possible to test with Pearson's chi-square test. Thus, the pattern seems to be that contracts for new buildings and refurbishment and renovation are differentiated according to type of building project, while differentiation of contracts for extensions and appendages of buildings seems to be less common.

There are significantly more shared contracts, general contracts, and collaboration/interaction contracts for signal buildings and fewer principal and turnkey contracts. There are similarly more turnkey contracts and less shared contracts, general contracts, principal contracts and collaboration/interaction contracts for standard buildings. In case of technically complex buildings, there are significantly more shared contracts, general contracts, principal contracts and collaboration/interaction contracts than expected and fewer turnkey contracts. These findings clearly indicate that building contracts are differentiated according to the building projects' character.

For new buildings, there are significantly more shared contracts and turnkey contracts, and fewer general contracts and principal contracts. In refurbishment and renovation of buildings, there are significantly more general contracts and principal contracts, and less turnkey contracts. In extensions and appendages of buildings, there are more shared and general contracts, and less principal and turnkey contracts. However, these differences are not statistically significant. The patterns seems to be differentiation of building contracts in case of new buildings, refurbishments, and renovations, but not in case of extensions and appendages.

## *3. Are there connections between the buildings' total costs and the type of contracts used?*

Projects with a total cost less than 150 million NOK have more open tenders and direct orders and less closed tenders. Projects with a total cost between 150 and 700 million NOK use more closed tenders and

less open tenders and direct orders. For projects with a total cost above 700 million NOK, there is more of open and closed tenders and less direct orders. These differences are statistically significant.

Projects with a total cost of less than 150 million NOK use more fixed price contracts and less fixed price contracts with incentives, PPP/lease contracts, time and material contracts and target price contracts with risk and gain sharing. Projects with a total costs between 150 and 700 million NOK use more of fixed price contracts with incentives, PPP/lease contracts and target price contracts with risk and gain sharing, and less fixed price contracts and time and material contracts. For projects with a total cost of more than 700 million NOK, there are more fixed price contracts with incentives, PPP/lease contracts, and time and materials contracts, and less fixed price contracts and target price contracts with risk and gain sharing. These differences were not possible to test with Pearson's chi-square test, but the findings indicate differentiation of contract types based on the projects' total cost and the different categories of contracts' relative transaction costs.

Projects with a total cost less than 150 million NOK use more shared contracts and principal contracts, and less collaboration/interaction contracts. Projects with a total cost between 150 and 700 million NOK use more collaboration/interaction and turnkey contracts than shared, general, and principal contracts. Projects with a total cost of more than 700 million NOK use more shared, general and principal contracts, and less collaboration/interaction and turnkey contracts. These differences are statistically significant. Thus, building contracts are differentiated according to the projects' total costs and the different building contract categories' relative transaction costs.

#### *4. What are the most important reasons for choosing the particular project models?*

The respondents' top five reasons for choosing the particular project model are first the building owners' need for predictable investment budgets, second the building owners' experience and the building owners' former experience with similar building contracts; fourth the building owners' own competency and finally the building owners' capacity/availability of personnel. These are highly rational reasons for choosing project model.

#### *5. Are there any connections between the building owner's specific and measurable requirements and the building project's value creation for owners and users?*

The building owners' top five requirements for their buildings are firstly investments/project costs, secondly building erection time, thirdly energy consumption, fourthly architecture, and finally adaptable buildings and organizing for optimal operations of the core business. Economy during the use phase (LCC, etc.), environmental concerns (BREEAM classification, etc.), aesthetics, and tenant costs (lease and operational costs) are somewhat less important. Adaptable buildings and organizing for optimal operations of the core business are of significant importance for a building's usability. That is also the case for economy during the use phase (LCC), environmental concerns, and tenant costs.

There is a statistically significant connection between the building owners' requirements for investment/project cost and the finished building's value creation for owners and users, but no significant connection between the building owners' requirements for building erection time and the finished building's value creation for owners and users. There is a statistically significant connection between the building owners' requirements for energy consumption and the finished building's value creation for owners and users. There is similarly a statistically significant connection between the building owners' requirements for architecture and the finished building's value creation, and the building owners' requirements for adaptable building and the finished building's value creation for owners and users.

There is also a statistically significant connection between the building owners' requirements for environmental concerns (BREEAM, etc.) and the finished building's value creation, and a statistically significant connection between the building owners' requirements for aesthetics and the finished building's value creation for owners and users. However, there are no connection between the building owners' requirements for tenant costs (lease and operational costs) and the finished building's value creation for owners and users.

Signal buildings provide more than expected better than average value creation for owner and users, and less than expected average value creation for owners. These differences are statistically significant. Standard buildings provide more than expected less than average and more than expected average, and less than expected better than average value creation for owner and users, and these differences are statistically significant

Technically complex buildings provide more than expected better than average or less than average value creation for owners and users, and less than expected average value creation for owner and

users. Also these differences are statistically significant. Thus, signal buildings, standard buildings and technically complicated buildings have somewhat different value creation patterns for owners and users.

6. *Are there connections between project models; i.e. the combination of tender, contract and building contract, and the project's outcome?*

Do different owners' use different project models? Public administrations use far more open tenders and less direct orders. Private enterprises use less open tenders and more closed tenders and direct orders. These differences are statistically significant. These differences are most likely a result of the laws and regulations that regulate public procurements, as well as habits and established practices.

Municipalities and county municipalities use more fixed price contracts and less fixed price contracts with incentives and time and materials contracts. The municipalities and county municipalities also use PPP/lease contracts. Private enterprises use more fixed price contracts with incentives and target price contracts with gain sharing. Private enterprises use less time and materials contracts. Government bodies use less fixed price contracts, PPP/lease contracts and target price contracts with gain sharing, and more time and materials contracts. These cases have not been possible to test with Pearson's chi-square test. Private enterprises seem to be more inclined than public administrations to use incentive contracts. What about the

## 7. Conclusions

The present research is a cross-sectional large N observational design. The questionnaire was developed together with experts in the field pre-tested on a number of informants. These facts clearly strengthen the study's validity.

The present research has investigated six questions: Do different categories of building owners' use different project models? Are the project models differentiated according to the buildings' character and type of building project? Are there connections between the buildings' character and total costs and the type of contracts used? What are the most important reasons for choosing the particular project models? Are there any connections between the building owner's specific and measurable requirements and the building project's value creation for owners and users? Are there connections between project models; i.e. the combination of tender, contract and building contract, and the project's outcome?

The present research has shown that different categories of building owner use different project models. Project models are differentiated according to the buildings' character and type of building project. There are connections between the buildings' character and total costs and the type of contracts used. There are connections between the building owner's specific and measurable requirements and the building project's value creation for owners and users. Finally, the present research has also shown there are connections between project models and outcome.

The results may have a slight success bias since more than 50 percent of the projects were reported to perform above average. Further research is needed, preferably similar studies in other countries to facilitate comparison across borders and cultures.

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# **Feelings of neighborhood safety in living environment**

Anja Drnovšek

Student at Nova University, European faculty of Law, Slovenia

E-mail: anja.drn@gmail.com

## **Abstract**

We live in a time, when the security and the sense of security are important factors of each individual as well as society as a whole (burgaries, robberies, terrorism, crime and other threats to people). There are number of factors, which contribute to the security of the country and the related-security of citizens. In recent times the security situation in Slovenia mainly revolves around economic factors. At this time the security is undrestood more in terms of the self survival and related to limited financial resources. We are interested how demografic factors such as gender, marital status and type of settlement affect the influence to the perception of security threat in Slovenia. We are focuced on pepole who live near the border, in cities Nova Gorica (Slovenia) and Gorica (Italy). We would like to know, how the feel of security affects on purchasing decisions of real estate. We are interested in how people trust the government. The results show that the safety is increasingly becoming a task of each individual trying to estabilish partnerships with pluralist institutions of formal social control. Security is a circular aspect of citizens' lives. Insecurity of any kind is a source of fear and worry which can have a negative impact on the general quality of life. It implies uncertainty regarding the future which may have a negative impact on the potencial real estate purchester. The economic crisis have shown how important economic safety is for quality of life of Europeans, as the feeling of vulnearibility can drastically reduced the sense of personal freedom.

**Keywords:** Security, Demographic factors, Settlement, Slovenia, Italy

## 1. INTRODUCTION

We live in a time, when security and the sense of security are important factors of each individual as well as society as a whole. A day does not go by without reference to burglaries, robberies, terrorism, crime and other threats to people, both domestic and international. Slowly, we will have to cope with the fact that the individual, as a part of society, is constantly exposed to numerous sources of threats that result from processes within society and the reflection of its economic, social and technical – technological development. Even if there are no direct threats in the country, it does not mean that its inhabitants feel safe. When we refer to a threat to the country, we can think of a number of factors, which contribute to the security of the country and the related-security of its citizens (Sotlar, 2008). In these times, the security situation in Slovenia mainly revolves around economic factors, as for the national level, it revolves around economic crises and the recession. At this time, security is understood more in terms of survival itself and it is related to limited financial resources. I will research and try to present some of the basic concepts related to security threats, and at the same time I will present and interpret the result of security threats perception of respondents, who will participate in my research. I am also interested in how demographic factors such as gender, marital status and type of settlement affect the perception of security threats of the people who live near the border, In Slovenia and Italy, in Nova Gorica, Gorizia and their surroundings. I would also like to know what influence does the sense of security has in buying a property. And at the end, I would like to know how do people trust the government. If the police do its job efficiently, the citizens can feel safe in their own country. I created a survey on Ika (internet page for surveys) with 16 questions regarding security issues. Each individual must provide for his or her own security, only than he or she can predict the intensions and activities of other members of modern society, which may contribute to the security of the country as a whole. I will compare my results of the survey with another research and present it in this article.

## 2. DEFINITION OF THE DISCUSSED PROBLEM AND THEORY

Living is one of the basic human functions and it is a starting one, spatially the narrowest, but mostly it is the most »static« function (Zupančič, 2012). The need to stay is present always and everywhere, and it is directly or indirectly connected with all other areas of people's life. The apartment (home, residence) may be understood as the materialization of living and it represents a fundamental human habitat. It is a mix of rooms, connected in a functional area with clearly defined borders that gives the individual a long-term safety place in which he lives the most intense emotional relationship (Tiran, 2015).

In the »living environment« we manage the basic human needs. In addition to this basic function, there are also other relevant functions in the territorial aspect of the living environment. The theory of social geography includes general activities, which create spatial relationships: live, work, care, education, recreation, communication, and community life (Tiran, 2015). Every living environment must allow people the satisfaction of basic human needs and activities. With the social development, especially in terms of concentration and division of labour, the rate of furnishing living environment and the minimum conditions for equipment changes. Therefore, it is not sufficient to define the basic functions that must be included, but we have to add their level of equipment or quality.

From the foregoing, we can draw a definition of the living environment: it is a case of elements and circumstances that enable human existence and the satisfaction of basic human activities/needs.

There are still some limitations and explanations:

- The quality of the living environment is primarily dependent on social well-being. It partially depends on the equipment of the settlement, neighbourhood, accommodation, the latter being the result of economic power of individuals and companies. Better equipment of the settlement and higher standard of living do not guarantee quality of life, but they often allow it.
- The living environment can be observed from the level of an individual or a community. The definition of a living environment depends on this element.
- A person's apartment and his way of living are not entirely autonomous decisions of an individual, but they represent an extent of the social environment. It brings out an individual's interest only on a certain level.
- The living environment can be observed from the level of the settlement (city), neighbourhood and house, accommodation. Each one of these units defines the living environment of other elements, and they all have different meanings regarding the living environment.
- In the living environment, we can distinguish both the public and the private part.

- The living environment can also be understood as an ecological category. This is a spatial ecologic arrangement, which provides a healthy living environment for its habitants, in form of potable water, regulated utilities, fresh air, minimal pollution.
- The living environment also has an experimental component. This is an important and comprehensive issue of sorting out urban settlements in general, which is basically the realization that a person wants to live in an organized and developed environment. This aspect of the living environment concerns both planning institutions and the individual.
- The living environment can be observed from the perspective of the user's or the designer's point of view. The approach and findings can be very different for the same example. If we consider the quality of the living environment as a social category, the necessary arrangements and equipment of the settlement, neighbourhood or accommodation are a priority, which still allow a certain quality of life or at least they represent a potential option. From the user's or resident's perspective, it represents the first perception and evaluation of the environment in which he lives.
- The quality of the living environment cannot be measured or estimated with absolute value, it always has a relative meaning. We can express it in comparative ways or with regard to a certain (chosen) element, an average or a type.

Security is one of the most important human values (Pogačnik, 2002) and the need for security is one of the basic human needs. Human security is influenced by various phenomena in the region. A threat to human security is a very multifaceted concept and it consists of many different aspects (such as flooding, traffic, earthquakes, personal safety, etc.) Numerous studies have shown that safety and the sense of security have a significant impact on the quality of the living environment and the quality of life (Tiran, 2015).

Meško uses the concept of crime in the general language, as the sum of all those practices that attack or threaten fundamental human values. These are mainly life and physical integrity, freedom and rights, property and safety, fundamental social values, national security and its mayor institutions. Meško includes in his definition of criminality only acts which are recorded as criminal within the law of a certain country (Meško, 2006).

When we talk about crime detection, in a broad sense, we mainly think of detection of offenses and crimes, which are defined as such and have penalties prescribed for the offender. This means that the offender have to do something illicit, criminal, be detected or tracked and he have to be found guilty. The regulation for offenses used in the Republic of Slovenia is the Criminal Code. In addition, there are also other laws limiting human behaviour and therefore prescribing offenses that fall under the competence of various inspection services.

The police is an armed authority, is responsible for detecting all forms of crime. It is a state institution whose task is to protect the people and their property, and to ensure order in the society. Because of that, the police also have certain authorities which enable them to perform their duty in an appropriate manner even in the most dangerous situations. They frequently use a repressive manner in which they can interfere with human rights and freedom, that is why they are subjected to constant supervision, both external and internal. It is also important to mention that they are organized in a decentralized manner, if they wish to implement a modern philosophy of community-oriented policing, which must be present for all employees at all levels within the organization.

Its objective is primarily to relax the negative attitude towards itself and raise the level of understanding, sympathy and support for police work and the police as an organization, to develop good relations with the public in a professional way, to preform quality services in terms of security, which must be based on respect of the law, police ethics, police skills, and ultimately to develop good communication with the public.

### **3. ENVIRONMENT AS AN (IN)STABILITY FACTOR**

The purpose of the following contribution is to present the fact that environmental changes influence the security environment in countries and regions all around the world. The traditional indicators used to assess the security environment in a certain country or region are well established. Usually, they are

related to the country or region's economic, political and social environment, the functioning of the country's administration, judiciary and levels of corruption and crime. Environmental changes and natural resources (or usually the lack of them) have an impact on the security situation in individual countries and regions. Therefore, the state of the environment in countries and regions should become one of the key indicators (on the basis of which the security environments of certain states or regions in the world are assessed (Fritz, 2015).

Environment protection in every modern country represents a great challenge for the country's politics since protecting the environment is becoming an increasing problem. Country governance enacts legal framework to define acts that are, in regard of executing forms and crime intensity, offenses or criminal acts. Lately, in difficult financial times, environmental crime is often connected to corruption, mostly in issuing various environmental permits. Because of that, environmental crime is defined in a wider framework and connected to economy crime. To restrict specific environmental offenses, the government has different mechanisms of control and surveillance via the Environmental and Spatial Planning Inspectorate with its inspectorate services.

#### **4. SECURITY**

Individuals and society are constantly exposed to multiple sources of threats. Some are naturally conditioned, and others are reflections of a society's economic, social and technological development (Sotlar, 2008). Therefore, if the country has no direct threats, its citizens do not necessarily feel safe. When we mention a threat to the country, we think a number of factors, like terrorism, natural and technological disasters, crime and drugs, economic violence, social threats, environmental degradation and many other factors which contribute to the security of the country and the security of its citizens (Sotlar, 2008).

Security threats are actually changing over time. Changing our perception of a threat and consequently, it changes the national and international security instruments which are needed in order to deal with old and »new« threats (Prezelj, 2002). A country's conscious efforts to maintain a state of security include the civilization and cultural category that cover all aspects of modern security. These are all forms of social life that are considered to be social values. Forms of social organization cover regional, national, international and global security (Anžič, 1997).

Police work in a community has increased due to the lack of good cooperation between citizens and the police force. The idea of police work in the community is based on a partnership between police officers and communities, and a common solution to security problems. Good cooperation contributes to a more successful suppression of criminality and the maintenance of order (Meško and Lobnikar, 2005).

The modern approach of police activity is based on a common form of problem solving and more effective cooperation between citizens and the police.

#### **5. SOCIAL CLASS AND FEAR OF CRIME**

Fear of crime is a phenomenon that affects the quality of life, since it forces people to change their behaviour and everyday life. Numerous studies have shown that some groups experience greater fear of crime due to the perception of their own vulnerability, physical and/or social. You can never have a completely safe environment if you live in a city where crimes are a normal part of your daily life. Peace and order go hand in hand with going from your home to the workplace, store, school, or wherever you need to go. Government agencies issue crime statistics to reflect the number of incidents reported in different areas. Police officers are the right persons to prevent and stop crimes. Developed nations normally have low crime rates, thanks to their efficient security system. Government plays a big role in maintaining safety in a country. Its ability to address what the citizens fear is a major determination future action. Disaster preparedness for nations in danger of having strong blizzards, earthquakes and thunderstorms are also taken into consideration. This is not something we can control immediately, as it is up to the government to implement policies that would benefit the general public (what you need to know about a safe living environment). Like elsewhere in the world, Europe also faced various types of crime, especially drug trafficking, organized crime and immigration. Many organizations and institutions in Europe have adopted various documents, recommendations and guidelines aimed at curbing crime and increasing safety in the European Union. Today, people are greatly aware of how important it is to help and advice each other. The cooperation between citizens and relevant institutions has drastically

improved. In particular, the police began to give much greater emphasis on preventive work and advice for citizens. However, despite many projects, people should understand that crime cannot be completely eradicated, because people will always try new ways to avoid justice.

One of the factors that influence the feeling of danger is the disorganisation of the environment and the sign of disorder. The disorganisation of the environment is also one of the possible explanations for the direct correlation between the fear of crime and demographic differences (Meško, 2002).

The disorganisation of the environment and the disorder are connected with violations rules for the maintenance of public order, and the disorder and decline of the connection within the neighbourhood. In literature we find two forms of disorder, physical and social disorder. Physical signs of environmental disorder are presented as signs of social disorder and mess such as: public drunkenness, trampling, begging, visibly selling drugs and abusing them in public places (Meško, 2002).

Social and emotional support from the neighbourhood contribute to the lower level of fear, because it increases the individual's confidence in his abilities, and the sense of danger is reduced (Meško et al. 2012).

In the research **QUALITY OF LIFE IN EUROPE- FACTS AND VIEWS- ECONOMIC AND PHYSICAL SAFETY** physically safety and economic security are being analysed (Quality of life in Europe-facts and views-economic and physical safety, 2015, e-source).

Economic safety is unequally distributed among different socio-demographic groups, where people with safe jobs and regular incomes will have a more positive view than unemployed people or people who cannot participate in the labour market due to illnesses or other limitations. A one-person household with a small pension will probably be more at risk of not being able to cope with economic risks than a two-person household with double income. The ability to face unexpected expenses was lower among middle-aged people and higher for people belonging to young and old groups. Economic safety was higher among couples over 65 years of age without children and lower for one-parent households. The concept of economic safety covers aspects such as wealth, debt and job insecurity. Economic safety and vulnerability refer to economic aspects as expressed through wealth, debt, and income/job security. However, comparable data does not exist for all EU Member states.

Physical safety means being shield from situations that put a person's physical security at risk, such as crime, accidents or natural disasters. A perceived lack of physical safety may subjectively affect a person's well-being more than an actual physical threat. Physical insecurity includes all the external factors that could potentially put the individual's physical integrity in danger. Criminal actions and accidents are the most obvious examples and a significant number of people is confronted with violence in everyday life.

## **6. CHANGES IN SELF-PROTECTIVE BEHAVIOUR**

The research in the article **CHANGES IN SELF- PROTECTIVE BEHAVIOR IN THE SLOVENIAN POPULATION** has shown that people feel relatively safe in their living environment when using security measures (Lobnikar, Kosec, 2014). Most of the differences are observed in the following self-protective behaviours: » consistent door locking«, »arrangement with neighbours or acquaintances to monitor a person's home during their absence«, »full car insurance«, and »arrangement with neighbours or acquaintances to collect their mail during a time of absence«. The research shows that women generally feel more at risk than men. As a result, women are more likely to use self-protective measures. (Lobnikar, Kosec, 2014).

The authors B. Grum and D. Kobal Grum in the article **FEELINGS OF NEIGHBORHOOD SAFETY IN LIVING ENVIRONMENT: CROSS CULTURAL COMPARISON-SLOVENIA, SERBIA, JAPAN** were focused on the environment and investigated the importance of the participants' sense of security in the neighbourhood they live in (Grum, Kobal Grum, 2015). They were interested in a cross-cultural comparison, based on demographic characters of the participants from Slovenia, Serbia and Japan. Women of all three nationalities expressed a significantly higher sense of security than male participants, and this reflects the apparent paradox, because stereotypically women feel safe less frequently than men. All participants typically expressed a lower sense of security in the cities. Comparatively, the lowest sense of security is reflected by the Japanese participants, which can be attributed to their highly expressed dissatisfaction with living in an urban environment, followed by Serbian participants, who are associated with poorer neighbourhood maintenance (physical disorder). The research shows that one of

the key factors is well- built local environments and quality of housing construction, which has a positive impact on the residents' satisfaction and their perception of safety. Further research is necessary to determinate how these factors affect the value of their purchasing decisions.

## 7. CONCLUSION

Nowadays, ensuring safety is becoming more and more a task for each individual trying to establish a partnership with pluralist institutions regarding formal social control. Security is a circular aspect of the citizens' lives. Being able to plan ahead and overcome a sudden deterioration in their economic and wider environment has an impact on their quality of life. Insecurity of any kind is a source of fear and worry which can influence someone's general quality of life in a negative way. It implies uncertainty regarding the future which may consequently have a negative impact on the present. The economic crisis has shown how important economic safety is for the quality of life of Europeans, as the feeling of vulnerability can drastically reduce the sense of personal freedom.

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# **Impact of the reputation of the neighborhood on purchasing decisions of potential buyers**

Suzana Vujmović

Student at Nova University, European faculty of Law, Slovenia

E-mail: : suzana.vujmilovic@gmail.com

## **Abstract**

In recent years, a number of changes have taken place, affecting the way people live. Technological development, changes in the way of life itself, a stronger self-awareness and distinct individuality, along with a rise in standard of living and many other factors, have led to changes in the perception living environment. Many neighborhoods that were once built were intended for industrial workers and their families. The concept of these neighborhoods has become obsolete from today's point of view, as it does not include the parameters used by today's planners. Nevertheless, for a large part of the population life in such neighborhoods is the only possible form of living. In the neighborhoods that were built during the post-war period and thanks to the "uniformed" architecture, they are unattractive, and today, in particular, there are households with lower incomes. Because of the lack of functionality, age and other factors, households with higher incomes decide for residence that meets their needs and expectations. This causes the emancipation of a more economically viable population, which in the long run can lead to social problems. The purchase of a property is one of the major and the important life projects for the average person (family). Before making an important decision, each buyer asks, among other things, what he is expecting of the purchased property and whether the property will meet his life needs. The article examines the influence of the reputation of the neighborhood on purchasing decisions of the potential buyers. A reputation is a concept that is subjectively experienced by every individual for himself. The reputation of the neighborhood is composed of various factors. Respectable neighborhoods contain all important infrastructures, a higher level of comfort, safety, belonging and recognition to the population. The results show that buying a property in more respectable neighborhoods also represents a unique status symbol with which the buyer non-verbally tells who and what is. The results also show that the reputation of the neighborhood projection is created by or intended to create an individual (or group of people) in order to impress the observer.

**Key words:** Reputation of the neighborhood, Shopping decision-making, Potential buyers, Subjective experience, Status symbol



## 1. UVOD

Musek (2000) vrednote zamišlja kot splošno pojmovanja in prepričanja o pojavih h katerim si prizadevamo in ki nam zato predstavljajo neke vrste cilje oziroma ideale. Definira jih kot posplošeno in relativno trajno pojmovanje o ciljih in pojavih, ki jih visoko cenimo, ki se nanašajo na široke kategorije podrejenih objektov in odnosov ter usmerjajo naše interese in naše vedenje kot življenjska vodila ter predstavljajo posebno vrsto motivacijskih ciljev. Ena od vrednot je ugled, ki jo uvrščamo med potence statusne vrednote, kamor sodijo med drugimi tudi moč, slava, denar, politični uspeh itd.

Ugled je pojem, ki ga subjektivno doživlja vsak posameznik zase. Ravno zato obstaja več definicij in mnenj o tem kaj sploh je. Ugled je vse kar ljudje vidijo, pri čemer je pomembno kako sami želimo, da nas vidijo. Dober ugled je dragocen, zato ga je treba negovati in vanj vlagati. Ustvarja se daljše časovno obdobje in se ne pridobi v enem dnevu. Na ugled soseske vplivajo različni dejavniki kot na primer: atraktivna lokacija, zasnova, zelenje, nadstandardna gradnja ipd. Vsekakor k ugledu pripomore tudi urejenost okolja, parkirišča oziroma garažna mesta, bližina pomembne infrastrukture, univerzitetnih in upravnih središč, prometne povezava, bližina trgovskih in športnih centrov ipd. Pomembno je poudariti, da na ugled soseske vplivajo predvsem prebivalci sami s svojo kulturo bivanja. Ugled soseske je projekcija, ki jo želi ustvariti posameznik (ali skupina ljudi) z namenom narediti vtis na opazovalca. Tvori se predvsem z zadovoljstvom in kakovostjo življenja stanovalcev določene soseske.

V zadnjih letih se dogajajo številne spremembe, ki na različne načine vplivajo na način bivanja ljudi. Tehnološki razvoj, spremembe v samem načinu življenja, močnejše zavedanje samega sebe in izrazita individualnost, skupaj z dvigom življenjskega standarda ter številnih drugih dejavnikov, so privedli do sprememb pri dojemanju lastnega bivalnega okolja. Številne soseske, ki so bile grajene nekoč so bile namenjene industrijskim delavcem in njihovim družinam. Načrtovala in gradila jih je država (Van Kempen in dr. 2007). Sama zasnova teh sosesk je z današnjega vidika zastarala, saj ne vključuje parametrov, ki jih današnji načrtovalci uporabljajo, ravno tako pa se je družba v preteklih letih močno spremenila. Ne glede na to, je za velik del prebivalstva življenje v tovrstnih soseskah edina izmed možnih oblik bivanja. V soseskah, ki so bile grajene v povojnem obdobju, živijo gospodinjstva z nižjimi dohodki. Zaradi nefunkcionalnosti, starosti in drugih dejavnikov, se gospodinjstva z višjimi dohodki odločajo za bivališče, ki zadovoljujejo njihove potrebe in pričakovanja. To povzroča odseljevanje ekonomsko močnejšega prebivalstva, kar dolgoročno lahko privede do drugih težav.

## 2. PREGLEDNA RAZISKAVA TEMATIKE

Nakup nepremičnine je za povprečno osebo (družino) eden od večjih in pomembnejših življenjskih projektov. Pred pomembno odločitvijo se vsak kupec med drugim vpraša tudi kaj od kupljene nepremičnine pričakuje ter ali bo zadovoljila njegove življenjske potrebe. Kotler (1996) je mnenja, da se kupci pri nakupovanju odločajo predvsem za izdelke, ki kažejo njihovo vlogo in položaj v družbi. Pri nakupnem odločanju igrajo veliko vlogo človeška čustva. Razlike med spoloma so očitne kadar govorimo o motiviranosti in željah glede nakupov, ravno tako se motivi in nakupno vedenje razlikuje med starostnimi skupinami. Na temo potrošniškega vedenja je bilo izvedeno veliko raziskav, predvsem z vidika človekove osebnosti (Grum, Kobal Grum, 2015). Po besedah istih avtorjev je potrošniško vedenje v veliki meri povezano z osebnostjo, motivacijo in čustvi.

Z nakupom se vsakodnevno srečujemo. Nakup temelji na odločitvi posameznika. Pri pomembnih odločitvah kot je na primer nakup nepremičnine je finančni in psihološki učinek odločitve večji, saj je končni rezultat v veliki meri odvisen od odločitve. Statt (1997) pravi, da sprejemamo odločitve s pomočjo ekonomskih in psiholoških vidikov. Nakup nepremičnine zahteva racionalno odločanje. Avtor razlaga, da bi kupec odločitve pri racionalnem odločanju s psihološkega vidika sprejemal objektivno in nepristransko, brez predsodkov ter zgolj racionalno, z ekonomskega vidika pa bi se odločil na podlagi temeljite analize vseh prednosti in slabosti. Tovrstno nakupno odločanje je nemogoče, saj se osebe med seboj razlikujejo, poleg tega pa kupec nima vsakič na razpolago vseh možnih informacij.

Emocije oziroma čustva so definirana kot kompletni procesi, ki imajo svoje fiziološke, psihološko-doživljajske in izrazne komponente. Čustva imajo različne funkcije in prispevajo k različnim kvaliteta doživljanja sveta, ki nas obdaja ter so pomemben del motivacije in medsebojne komunikacije (Rus, 2000). Isti avtor pravi tudi, da je motivacija v »psihologiji« definirana kot zanimanje za vzroke

človekovih dejanj. Po njegovih besedah motivacija pomeni, da nek konkretni cilj že obstaja in da smo za njegovo doseganje pripravljeni »premagati« številne ovire (Rus, 2000).

Današnji čas zaznamuje paleta tehnoloških, informacijskih ter drugih pridobitev, ki vplivajo na zaznavanje posameznikovega družinskega načina življenja, zaznamovanega z raznoliko naravo sodobnih poklicev. Pomemben dejavnik bivanja ni zgolj lokacija, ampak tudi kakovost bivanja; kako preživimo dan, kako opredelimo svoj prosti čas, kakšno je naše delo in kakšno je razmerje med prostim časom in delom (Dešman, 2015).

Rebernik (2002) razlaga, da sta razvoj slovenskih mest po letu 1945 zaznamovali dve osnovni obliki stanovanjske gradnje in sicer »družbena gradnja« blokovskih stanovanjskih sosesk in »individualna gradnja enodružinskih hiš«. V nadaljevanju razlaga, da je bila družbeno stanovanjska gradnja močno favorizirana vse do konca osemdesetih let, pred tem pa je najintenzivnejša gradnja blokovskih stanovanjskih sosesk bila značilna za šestdeseta, sedemdeseta in prvo polovico osemdesetih let. Najvišji obseg je družbena stanovanjska gradnja dosegla med leti 1975 in 1985, ko je bilo zgrajeno približno 10.000 stanovanj letno. Pomen družbene stanovanjske gradnje je bil v mestih večji, vendar se je po letu 1985 začel zmanjševati. V obdobju pred osamosvojitvijo se je ukinil sistem financiranja družbene stanovanjske gradnje, po osamosvojitvi (leta 1991) pa je bil sprejet stanovanjski zakon, ki je uvedel odkup družbenih stanovanj, ustanovitev stanovanjskega sklada in izdelavo nacionalnega stanovanjskega programa. V tem obdobju se je močno povečala komercialna stanovanjska gradnja za trg, kar pa je močno vplivalo na značilnosti samega stanovanjskega trga, stanovanjske gradnje ter posredno tudi na socialno-geografsko preobrazbo slovenskih mest (Rebernik, 2002).

Blokovske stanovanjske soseske so postale najbolj značilna in razširjena oblika stanovanjske gradnje in stanovanjskih območji v slovenskih mestih. Približno ena polovica prebivalstva v Ljubljani živi v blokovskih stanovanjskih soseskah iz šestdesetih, sedemdesetih in osemdesetih let (Rebernik, 2002). Glavni sestavini bivalnega okolja sta stanovanje in soseska. Avtorji v geografiji, psihologiji, sociologiji in drugih vedah navajajo različne elemente s katerimi opredeljuje bivalno okolje. Ker je bivalno okolje zelo širok pojem, ne obstaja univerzalna definicija, zato ga posledično ne moremo jasno opredeliti. Skupno večjemu številu opredelitev je to, da vsebujejo značilnosti grajenega fizičnega in družbenega okolja (Tiran, 2015).

Fikfak (2007) navaja, da bivalno okolje vsakega posameznika ne pomeni samo izbiro med stanovanjsko hišo z vrtom ali bivanje v večnadstropni blokovski gradnji, temveč tudi odločitev za bivanje v obstoječih starejših večstanovanjskih objektih. Zato je kvaliteta bivanja enako pomembna kakor velikost stanovanja (Fikfak, 2007). V svojem delu je opozorila na problem starejših objektov. Strinjam se z avtorico, ki pravi, da tovrstni objekti niso primerni ne le z vidika fizične pojavnosti, ampak tudi z vidika kvalitete sodobne bivalne kulture, kjer obstaja velika verjetnost, da se takšni objekti spremenijo v bivalne enote za socialno ogrožene skupine. V nadaljevanju razlaga, da država s svojim prostorskim načrtovanjem ne daje prednosti prenovi starih objektov, saj je tovrstno načrtovanje obremenjeno s številnimi formalnimi zapleti.

Na Inštitutu za politike prostora opredeljujejo sosesko ločeno od pojma sosedstvo in sicer *kot načrtovano, funkcionalno zaokroženo prostorsko enoto v mestu ali širšem območju mesta za okrog 2.500 do 5.000 ljudi. V območju dostopnosti pešca poleg stanovanj vključuje potrebno infrastrukturo in vso dnevno preskrbo, osnovno šolo, otroško varstvo, javni prostor, zelene površine in postaje javnega potniškega prometa, večinoma brez tranzitnega motornega prometa znotraj območja*<sup>72</sup>. Tak princip soseske so urbanisti začeli razvijati že konec 19. in v začetku 20. Stoletja. Ameriški urbanist Clarence A. Perry je leta 1929 prvi uporabil pojem stanovanjska soseska (angl. *neighbourhoodunit*), ki je sosesko opredelil kot enoto mesta ter predlagal omejitev prebivalcev na 5.000, kar odgovarja eni osnovni šoli. Le to je postavil v center soseske, njeno velikost pa določil na osnovi razdalje med stanovanji in šolo, ki naj ne bi smela presegati 1.200 m. poudarjal je pomembno vlogo pešca in izločitev tranzitnega prometa (Malešič, 2015).

Soseska s takšnim številom prebivalcev se že šteje za večjo sosesko. Kempen in drugi (2006) definirajo veliko sosesko kot skupino zgradb, ki predstavljajo jasno razmejeno prostorsko območje. To so soseske, ki jih je načrtovala država ali pa so bile zasnovane z njeno podporo.

<sup>72</sup> Glej <http://ipop.si/urejanje-prostora/izrazje/soseska-in-sosedstvo/>

Pomembno je poudariti, da ima vsaka soseska svoje edinstvene značilnosti in se razvoj le teh ne more obravnavati ločeno od lokalnega (urbanega, regionalnega, nacionalnega) konteksta (Filipovič, Hrast, 2016).

Nakup nepremičnine je za povprečno osebo (družino) eden od večjih in pomembnejših življenjskih projektov. Pred pomembno odločitvijo se vsak kupec med drugim vpraša tudi kaj od kupljene nepremičnine pričakuje ter ali bo zadovoljila njegove življenjske potrebe. Kotler (1996) je mnenja, da se kupci pri nakupovanju odločajo predvsem za izdelke, ki kažejo njihovo vlogo in položaj v družbi.

Avtorici Kos Koklič in O. Vida (2008) sta v svojem prispevku *Strateško nakupno vedenje: vedenje porabnikov v primeru nakupa hiše* uporabile obstoječe znanje na področju vedenja porabnikov in raziskali področje strateškega nakupa v primeru nakupa montažne hiše. S kvalitativno raziskavo sta ugotovili, da kognitivni in racionalni dejavniki premalo pojasnjujejo vedenje porabnikov, kadar so visoko vpleteni v nakup izdelka kot je hiša.

### 3. RAZISKOVALNA IZHODIŠČA

Temelj in iztočnica raziskave so raziskovalna vprašanja. Raziskovalna vprašanja na katera iščemo odgovore so:

- ali ugled soseske vpliva na nakupovalno odločanje potencialnih kupcev?
- ali je ženskam pomembnejši ugled soseske pri nakupovalnem odločanju?
- ali je mlajšim kupcem pomembnejši ugled soseske pri nakupovalnem odločanju?
- ali ugled soseske povečuje občutek varnosti pri potencialnih kupcih?
- ali se osebe z višjo izobrazbo prej odločajo za nakup nepremičnin v uglednih soseskah?

Raziskava je potekala v treh sklopih:

- teoretični del
- empirični, analitični del – analiza rezultatov anketnega vprašalnika
- zaključni del.

Uporabljene so metode:

- deskriptivna metoda, s katero je povzeta obstoječo znanstvena literaturo ter na tej osnovi je definiran opis osnovnih pojmov
- metoda analize pisnih virov, internetnih virov, interpretacija.

V preglednem članku je predstavljena zgolj deskriptivna metoda ter kratki povzetki rezultatov.

### 4. UGOTOVITVE IN ZAKLJUČEK

Nakup nepremičnine je za povprečno osebo (družino) eden od večjih in pomembnejših življenjskih projektov. Pred pomembno odločitvijo se vsak kupec med drugim vpraša tudi kaj od kupljene nepremičnine pričakuje ter ali bo zadovoljila njegove življenjske potrebe (Grum, Temeljotov Salaj, 2010). Kristl in Davjak (2013) sta menja, da se kupci pri nakupovanju odločajo predvsem za izdelke, ki kažejo njihovo vlogo in položaj v družbi.

Menimo, da bi izsledki analize lahko bili uporabljeni za raziskovanje vedenja potencialnih kupcev nepremičnin na splošno, saj sta potrdili tezo, da je hiša izdelek, ki je tesno povezan s človekovo samopodobo in ima za različne ljudi različen pomen (Grum, Grum Kobal, 2015). Pomembno je poudariti le, da so v raziskavi sodelovali ljudje, ki so se zanimali za točno določen izdelek (montažna hiša).

Glavne ugotovitve raziskave so:

- vse vzorčne enote (z izjemo ene), vidijo hišo kot del svoje osebnosti, s katero lahko izrazijo svoj življenjski slog,
- nihče od anketirancev ne smatra hiše kot statusni simbol,
- razlika v dojemanju doma se opazi med ženskimi in moškimi. Ženske hišo povezujejo z občutji, moški pa s funkcionalnostjo,
- obema spoloma največ pomeni dobro počutje v hiši.

Raziskava podaja celovit pregled teorije in osnovnih pojmov obravnavanega problema, dopolnjena z lastno raziskavo o vplivu ugleda soseske na nakupno odločanje potencialnih kupcev nepremičnin. Zaradi vse večjega zavedanja o vplivu kulture bivanja in ugodnega bivalnega okolja na splošno počutje se ljudje, če le imajo možnost, odločajo za nakup nepremičnin v uglednejših soseskah. Kupcem nepremične v uglednejših soseskah ponujajo kvalitetnejše bivalno okolje, večji občutek varnosti, samoaktualizacije in samospoštovanja ter posledično predstavlja enega od pomembnejših statusnih simbolov.

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# **Transfer of young people (families) into on independent apartment – solving a housing problem**

Karmen Tertai  
ABC NEPREMIČNINE d.o.o., Slovenia  
E-mail: jana.tertai@abc.si

Bojan Grum  
Nova University, European faculty of Law, Slovenia

## **Abstract**

We are interested in whether the vast majority of young people (families) live independently in their own homes or still live with their parents. We have found that most young families do not live independently in their own homes, but rather live in their own or partner's parents. Nevertheless, they believe that living with parents is currently a suitable residence, which is an interesting finding. We have also found that young people, as the main reasons for an independent status, do not mention a small number of financially affordable housing and employment policies (problems in the labor market, employment), but the benefits they receive by staying with their or partner's parents. Contrary to some of the starting points in other studies, the analysis shows that the dependency of young people (families) can't be initially linked to the employment policy (problems in the labor market, employment) of young people (families), but this kind of stay is also linked to the benefits that younger generations get cohabiting with a generation of parents (eg laundry, cooking, babysitting, paying expenses). We also find that most young people (families) count on the help of parents and relatives in solving the housing problem, rather than the state with its regulatory measures (housing policy). We investigate whether the stay of young people (families) and old indicators of good intergenerational coexistence and solidarity is more or less an indication of the economic situation in Slovenia. In the survey, we found that the respondents strongly agree with the assertion that the uncertain economic situation will prolong the intergenerational coexistence. To the minimum, the respondents agreed that intergenerational coexistence is in the most cases the result of choice or decision, for example, the desire for coexistence and good relations between the generations. In any case, we found that the majority of the respondents think that the combined residence of young people (families) and the old ones is cheaper for everyone, which nevertheless indicates a connection with the financial status and the availability of economic goods in the country. Intergenerational relations are very much based on the family tradition and, lastly, to take care of older relatives. We also found that elderly respondents, to a lesser extent, indicate lower costs as the first reason for intergenerational coexistence. Young people, however, state that a common stay is cheaper and more beneficial for all, since young people (families) benefit the elderly (care of children, help with household tasks, etc) and thus they live more comfortably and better (they have more time for themselves).

**Keywords:** Young, Old, Intergenerational, Housing, Extended coexistence

## 1. UVOD

Odhod iz stanovanja staršev v prvo samostojno stanovanje v veliki meri označuje trenutek človekove osamosvojitve. Z demografskega vidika pomeni nastanek samostojnega gospodinjstva in začetno točko posameznikove stanovanjske kariere (Mandič in Gnidovec, 2000). Včasih je bila verjetnost prehoda mladih iz starševskega v samostojno stanovanje precej samoumevna, v novejšem času pa postaja vedno bolj postopna in odložena. Raziskave so pokazale, da se v različnih državah ta dogodek zgodi kasneje, pri višji starosti mladega človeka. Med državami pa so velike razlike v času, ko se ta prehod zgodi. Na primer mladi Danci se odselijo od doma staršev v povprečju že pri dvajsetih letih, medtem ko se Italijani odločijo za to v povprečju šele po sedemindvajsetem letu. Iacovou ugotavlja tudi, da se v vseh evropskih državah ta prehod zgodi prej pri ženskah kot pri moških (Iacovou, 2002). Starost, pri kateri mladi zapustijo dom staršev, je povezana z mnogimi dejavniki, kot so zaposlitvene, dohodkovne, družinske značilnosti in zgodovinske okoliščine. Odhod iz starševskega stanovanja ni vselej le enkratni dogodek, ampak je vse pogostejše nekaj časa trajajoč proces postopnega osamosvajanja, v katerem mladi razvijejo nove oblike pol družinskega življenja (Mandič in Gnidovec, 2000). Obdobja novega načina pol družinskega življenja se je prijela oznaka LAT faza, kar v angleščini pomeni living apart together, to pa v slovenščini pomeni živeti skupaj in hkrati narazen. LAT faza je vmesna, intermediarna faza med družinsko odvisnostjo in od izvirne družine neodvisnim življenjem (Rener, 1996).

Na podlagi opazovanja potencialnih pridobiteljev stanovanjskih nepremičninskih pravic na trgu številni raziskovalci pripisujejo nekaterim dejavnikom splošno vplivnost na trg (Thomas, 2008; Cohen, 2005; Temeljotov Salaj in Zupančič, 2006). Wong in Hiu jih združujeta v dejavnike lastnih pričakovanj in dejavnike zunanjih pričakovanj. Lastna pričakovanja povezuje s potencialnimi pridobitelji nepremičninskih pravic, investitorji in lastniki, ki pričakujejo visoke (nizke) donose v prihodnosti, ko trg raste (pada) in imajo prevelika (premajhna) pričakovanja glede višanja (padanja) cen v pričakovanju nadaljnje rasti (padanja) cen na trgu.

V raziskavi nas zanima, kaj mladi (družine) menijo o tem, ali bi država morala z regulativnimi ukrepi (kot so zakoni, pravilniki, uredbe ipd.) olajšati mladim (družinam) nakup stanovanjske nepremičnine.

## 2. PREHOD IZ MLADOSTI V ODRASLOST

Mladostni prehodi se v industrializiranih državah odmikajo od tradicionalnih normativnih pričakovanj, vzorci teh prehodov so vedno bolj pluralistični; prehodi niso več tako predvidljivi, kot so bili v preteklosti, ampak morajo biti »izpogajani« v institucijah, skozi katere gredo mladi ljudje. Trendi se nagibajo k destandardizaciji in deregulaciji prehodov (Miheljak 2002). Uletova opisuje, da so nastale ključne spremembe v poglavitnih institucijah, ki so doslej opredeljevale prehode v odraslost, in sicer (Ule, 2008):

- spremembe v družinskem sistemu: slabenje avtoritete staršev, krepitev avtoritete mladih, poznejše poroke itd.;
- spremembe v izobraževalnem sistemu: diverzifikacija izobraževalnih karier, podaljševanje izobraževalnega obdobja, demokratizacija izobraževalnih stilov;
- spremembe v zaposlovanju: prožna zaposlitev, menjava obdobj zaposlenosti in nezaposlenosti, prekvalifikacije in vseživljenjsko izobraževanje in izpopolnjevanje;
- spremembe v odnosu do javnega in političnega: nižja udeležba mladih in odraslih v javnem in političnem življenju;
- spremembe v vsakdanjem življenju: mediji in poraba pomembno oblikujejo vzorce vsakdanjega življenja.

Iz strokovne literature poznamo kar nekaj evropskih modelov prehodov iz mladosti v odraslost, ki so opisani v nadaljevanju:

- **Severnoevropski model:** mladi zgodaj zapustijo dom staršev, živijo skupaj v paru in pozno začnejo družinsko življenje.
- **Sredozemski model:** mladi ostajajo doma daljše obdobje; ko zapustijo dom staršev, se razmeroma hitro poročijo.
- **Postkomunistični model:** visoke družbene razlike, ki jih ustvarjata tranzicija in podaljševanje šolanja; število porok in otrok upada.
- **Britanski model:** daljše obdobje življenja s partnerjem, toda sorazmerno pozno rojevanje.

- **Srednjeevropski model:** mladi dobivajo podporo predvsem od družine in toliko manj od države (Ule in Kuhar, 2003).

Na podlogi opisa Uletove in Kuharjeve so vidni naslednji vzorci: v severnoevropskih državah je več kohabitacij, manj porok, otroci se rojevajo kasneje, stopnja rodnosti se v nekaterih državah povečuje. V južni Evropi pa se ljudje poročajo bistveno prej, kohabitacije in samsko življenje se pojavljajo redko, pari imajo razmeroma malo otrok. Življenjske situacije mladih odraslih niso tako raznolike kot na severu, saj do poroke večinoma ostajajo doma. (Ule in Kuhar, 2003). Glede na kulturo, vrednote in norme, je Slovenijo težko uvrstiti v katerega izmed modelov; še največ podobnosti se kaže s sredozemskim modelom, kjer mladi ostajajo doma dlje časa in srednjeevropskim modelom, saj tudi mladi pri nas dobivajo večinoma podporo od staršev in ne od države.

Odhod od doma oz. od izvorne družine je eden izmed ključnih dogodkov, ki prispeva k samostojnosti in neodvisnosti mladih. Mandič razdeli dejavnike prehoda v samostojno življenje na več skupin oz. dejavnikov.

- **Strukturni dejavniki:** posamezniki na njih nimajo vpliva, saj so družbeno dani (demografske spremembe, razpoložljivost stanovanj itd.).
- **Osebnostne preference:** življenjski slog, osebne značilnosti, identiteta, vrednote itd.
- **Posameznikovi viri:** zdravje, socialni kapital, finančni viri, znanje, vključenost v družabna omrežja ipd.
- **Stanovanjske razmere v domu staršev:** raziskave so pokazale, da se mladi prej osamosvojijo, če je družinsko domovanje majhno, in kasneje, če je prostornejše.
- **Partnerstvo:** sklenitev partnerskega razmerja je pomemben dogodek v življenjskem poteku posameznika.
- **Spol:** mlade ženske se povprečno dve leti in pol prej odselijo kot mladi moški (Mandič, 1999)

Poleg naštetega sodita sem velikost kraja in stabilnost odnosa z starši. Tudi zaposlitev sama po sebi ni več faktor odločanja za neodvisnost in samostojnost, ampak namesto nje vedno večji pomen dajemo posameznikovi plači. Ker je za mlade odhod v samostojno gospodinjstvo tako finančno kot psihično težak, se velikokrat želje razlikujejo od realnosti (Črnivec, 2013).

Podatki Lavriča in drugih kažejo, da si je le dobrih 15 % mladih, ki so se odselili od staršev, nepremičnino, v kateri živijo kupilo s svojimi sredstvi ali kreditom. Rezultati kažejo, da prevladujejo najemniška stanovanja in takšna, ki so v lasti njihovih staršev ali staršev partnerja. Tisti, ki so lastniki stanovanj, v katerih živijo, so do njih prišli v največji meri tako, da so jih podedovali 48,7 % ali so vzeli kredit 32,9 %. Gotovinski nakupi so redki (sredstva staršev ali sorodnikov: 7,6 %, lastna sredstva 10,8 %). (Lavrič in drugi, 2010).

### **Pričakovanja potencialnih pridobiteljev stanovanjskih nepremičninskih pravic**

Avtorja članka Bojan Grum in Alenka Temeljotov Salaj (2010) v uvodu članka navajata, da so pričakovanja potencialnih pridobiteljev stanovanjskih nepremičninskih pravic različna ter odvisna od njihovih potreb, želja in interesov, pravno dopustnih možnosti in materialnih zmožnosti v sodobnih ekonomskih okoljih. Na podlagi opazovanja potencialnih pridobiteljev stanovanjskih nepremičninskih pravic na trgu številni raziskovalci pripisujejo nekaterim dejavnikom splošno vplivnost na trg (Thomas, 2008; Cohen, 2005; Temeljotov Salaj in Zupančič, 2006). Wong in Hiu jih združujeta v dejavnike lastnih pričakovanj in dejavnike zunanjih pričakovanj. Lastna pričakovanja povezujeta s potencialnimi pridobitelji nepremičninskih pravic, investitorji in lastniki, ki pričakujejo visoke (nizke) donose v prihodnosti, ko trg raste (pada) in imajo prevelika (premajhna) pričakovanja glede višanja (padanja) cen v pričakovanju nadaljnje rasti (padanja) cen na trgu. Ugotavljata, da so opazovani udeleženci v realnosti bolj dovzetni za vedenje drugih investitorjev ali lastnikov kot za realne tržne razmere. Zunanja pričakovanja udeležencev pa povezujeta s spreminjanjem cen na trgu in regulativnimi ukrepi države. Ugotavljata, da predvsem v času pričakovanja rasti cen država spodbuja investicije in lastništvo z regulativnimi ukrepi, banke pa ponujajo ugodna posojila. Dejavniki lastnih pričakovanj tako zajemajo predvsem fizične dejavnike, dejavnike bivalnega okolja in socioekonomske dejavnike, dejavniki zunanjih pričakovanj pa združujejo dejavnike, ki opisujejo stanovanjsko in davčno zakonodajo, regulativne ukrepe in ekonomsko stanje na trgu stanovanjskih nepremičnin (Wong in Hiu, 2006).

V analizi nas zanimajo lastna pričakovanja potencialnih pridobiteljev stanovanjskih nepremičninskih pravic v odvisnosti od spola, starosti, izobrazbe in zaposlenosti udeležencev. Zanima nas, ali udeleženci, glede na osnovne demografske značilnosti, izražajo statistično pomembne razlike glede lastnih pričakovanj.

Pri načrtovanju posameznega stanovanjskega posega v prostor je po našem pomembno poznati pričakovanja potencialnih pridobiteljev nepremičninskih pravic, ki so v tem procesu ciljna skupina potencialnih kupcev za načrtovalce in investitorje. Pri tem se zavedamo, da je najboljša raba pravzaprav ekonomska kategorija, seveda vezana na pričakovanja, vendar se v fazah preverjanja izvedljivosti abstrahira. Izhodišče za razvoj nepremičnine nikakor niso samo pričakovanja potencialnih kupcev, pomagajo pa pri pozicioniranju na trgu, opredelitvi stanovanj, opremljenosti in posledično ceni. Neposredne povezave med namensko rabo, najboljšo rabo in pričakovanji ni, saj gre za različne metodološke sklope. Zanima nas pa, kateri od naštetih dejavnikov vplivajo na kupčevo odločitev za nakup nepremičnine in seveda kateri bi se lahko upoštevali že pri načrtovanju stanovanjskih območij: lokacija, velikost, balkon, svetlost, odprt pogled, mir, starost objekta, starost soseske, parkirišče, internet, centralno ogrevanje, javni prevoz, prometne povezave, bližina vrtcev in šol, bližina zaposlitve, bližina trgovin, bližina zdravstvenih domov, bližina kulturnih domov, stroški vzdrževanja, sosedski odnosi, varnost v soseski, socialna pripadnost, ekonomski status, finančni dejavniki, fizični dejavniki, dejavniki bivalnega okolja, socioekonomski dejavniki, čas nakupa nepremičnine, socialna varnost, družbeni položaj, samostojnost, samozadovoljstvo, finančni viri pri nakupu. Nekateri od teh vplivajo na fazo načrtovanja (npr. prometne povezave ...), drugi so pa bolj pomembni pri upravljanju (npr. sosedski odnosi ...). V članku smo dejavnike razdelili na tri sklope – fizične: lokacija, velikost, balkon, svetlost, odprt pogled, mir, starost objekta, starost soseske, parkirišče, internet, centralno ogrevanje; bivalne: javni prevoz, prometne povezave, bližina vrtcev in šol, bližina zaposlitve, bližina trgovin, bližina zdravstvenih domov, bližina kulturnih domov ter socioekonomske: stroški vzdrževanja, sosedski odnosi, varnost v soseski, socialna pripadnost, ekonomski status (Grum in Temeljotov Salaj, 2010). Grum in Temeljotov (2010) sta izhajala iz hipoteze, da so razlike v pričakovanjih potencialnih pridobiteljev stanovanjskih nepremičninskih pravic v Republiki Sloveniji glede na spol, starost, izobrazbo in zaposlenost statistično pomembne. Na podlagi dobljenih rezultatov sta avtorja raziskave Grum in Temeljotov Salaj prišla do zaključkov, da se statistično pomembne razlike glede na spol pri lastnih pričakovanjih kažejo glede: možnosti parkiranja, stroškov vzdrževanja in glavnih dejavnikov po sklopih: finančni, fizični, bivalni in socioekonomski dejavniki ter občutek samostojnosti in samozadovoljstva. Pričakovanja moških udeležencev so višje izražena glede možnosti parkiranja in glede stroškov vzdrževanja, medtem ko so pričakovanja žensk višje izražena pri vseh ostalih dejavnikih, kjer se kažejo statistično pomembne razlike. Pričakovanja glede na starost udeležencev so za prikazane dejavnike višje izražena v starostni skupini od 20 do 29 let kot v starostni skupini od 30 do 40 let. Mlajši udeleženci izražajo višja lastna pričakovanja, in to glede: opremljenosti z internetom, dobrih prometnih povezav, socioekonomskega dejavnika, socialne varnosti, občutka samostojnosti in samozadovoljstva ter glavnega vira pri nakupu nepremičnine.

Glede na izobrazbo se statistično pomembne razlike pri lastnih pričakovanjih udeležencev kažejo glede finančnih, fizičnih dejavnikov in dejavnikov bivalnega okolja, časa nakupa nepremičnine, občutka samostojnosti in samozadovoljstva ter glavnih finančnih virov pri nakupu nepremičnine. Značilno je, da so pričakovanja najnižje izražena pri udeležencih z najnižjo izobrazbo, kadar so vezana na glavne dejavnike, ki po njihovem mnenju odločilno vplivajo na nakup nepremičnine. Pri tej skupini so pričakovanja glede časa nakupa lastne nepremičnine najvišje izražena, z višanjem izobrazbe tudi stopnja pričakovanja pada. Občutek samostojnosti in samozadovoljstva je najvišje izražen pri udeležencih s srednješolsko izobrazbo. Zanimivo je, da so pričakovanja glede virov pri nakupu lastne nepremičnine najvišje izražena pri najmanj izobraženih udeležencih, z višanjem izobrazbe pa tudi pričakovanja padajo. Torej udeleženci z najnižjo izobrazbo izražajo pričakovanja, da lastne nepremičnine ne bodo mogli kupili z lastnimi sredstvi, temveč s posojili, subvencijami, pomočjo sorodnikov.

Za lastna pričakovanja udeležencev glede na zaposlenost pa rezultati kažejo, da so pričakovanja glede boljšega družbenega položaja v družbi po nakupu lastne nepremičnine najvišje izražena pri brezposelnih udeležencih. Študentje izražajo najvišja pričakovanja glede dobrih prometnih povezav, bližine vrtcev in šol, bližine trgovin, finančnih in socioekonomskih glavnih dejavnikov, večjega občutka samostojnosti in samozadovoljstva. Zanimivo je, da so pričakovanja glede virov pri nakupu lastne nepremičnine najnižje izražena pri zaposlenih. Navedeno pomeni, da zaposleni udeleženci izražajo višja pričakovanja pa možnost nakupa nepremičnine z lastnimi sredstvi.



Pri načrtovanju stanovanjskega posega v prostor je pomembno, da poznamo pričakovanja potencialnih pridobiteljev nepremičninskih pravic, ki so v tem procesu ciljna skupina potencialnih kupcev za načrtovalce in investitorje. Analiza pričakovanj je le delno neposredno uporabna v samem planskem postopku. Splošna (tehnična) pričakovanja so predmet standarda, vse, kar je več, je predmet stroška izvedbe in cene. Menimo, da bi bilo treba v prihodnje prepoznane statistično pomembne razlike vrednostno analizirati ter raziskati njihov vpliv na trg nepremičnin, grajeno okolje in ne nazadnje na vrednost posameznih nepremičnin znotraj obstoječih zakonskih okvirov in v sodobnem ekonomskem okolju. Ali so pričakovanja morebitnih kupcev zares upoštevana tudi v sodobni, domači, komercialni produkciji stanovanj (npr. vrednost za denar) v največjih prebivalstvenih aglomeracijah, pa je predmet druge raziskave. Še več, če je ponudba na stanovanjskem trgu prilagojena povečevanju donosa graditeljev in hkrati odzivna na (razmeroma slabo) naložbeno zmogljivost večine morebitnih kupcev, potem komaj lahko govorimo o upoštevanju pričakovanj slednjih, predvsem pričakovanj, ki so vezana na eksistenčne potrebe ali želje (Grum in Temeljotov Salaj, 2010).

### 3. RAZISKOVALNI INSTRUMENT

Osrednji raziskovalni instrument članka je lastno oblikovan anketni vprašalnik. Nastal je na podlagi študija literature in kot izpeljanka oz. na osnovi štirih že izvedenih raziskav iz sorodnega področja predstavljenih v predhodnem poglavju.

Prvi sklop vprašalnika zajema demografske podatke anketirancev, in sicer je sestavljen iz šestih vprašanj. Ugotavljali smo spol, starost, dokončano stopnjo izobrazbe, zaposlitveni status, razred mesečnega dohodka glede na povprečno neto plačo v Sloveniji in pa kraj bivanja anketiranih.

Vprašalnik je vezan na ugotavljanje akterjev za reševanje stanovanjskih problemov mladih (družin) in pa na ukrepe, s katerimi bi država lahko olajšala mladim (družinam) prehod v samostojno bivanje. Vključuje tudi dejavnike, ki vplivajo na zadovoljstvo z medgeneracijskim bivanjem.

Anketne podatke za raziskavo v empiričnem delu naloge smo zbirali v obdobju od 25. septembra do 9. oktobra 2016. V spletnem orodju EnKlikAnketa (<https://www.1ka.si>) smo pripravili elektronsko obliko anketnega vprašalnika in spletno povezavo do nje razposlali po elektronski pošti med številne posameznike, predvsem pa mlade (družine). Delno smo izvajali tudi priložnostno anketiranje s papirno obliko ankete, na koncu pa smo podatke združili. Ocenjeno trajanje za izpolnitev ankete je približno 6,47 minute.

Analiza podatkov temelji na lastno pridobljenih podatkih in je kvalitativna. Podatki pridobljeni z anketnim vprašalnikom smo uredili in analizirali s statističnim programom SPSS. Izvedli smo frekvenčne izračune, deskriptivne (srednje vrednosti) in rezultate prikazali v obliki tabel in grafov. V analizo smo z namenom preverjanja statističnih značilnosti uporabili Hi-kvadrat test hipoteze enake verjetnosti in Hi-kvadrat preizkus hipoteze neodvisnosti. Pri tem smo uporabili standardno mejno vrednost signifikance ( $p$ ) – 0,05. V primeru da je bil  $p$  nižji od te vrednosti, smo potrdili statistično značilno povezanost med opazovanimi spremenljivkami. Pri tabelarnih prikazih smo pod tabelo navedli še druge, strožje kriterije. V primeru da smo se pri Hi-kvadrat preizkusu hipoteze neodvisnosti srečali s problemom premajhnih teoretičnih celičnih frekvenc (več kot 20 % vseh pričakovanih frekvenc je manjših od 5), smo uporabili Kullbackov  $\chi^2$  preizkus.

Vzorec naše raziskave predstavlja 164 priložnostno izbranih anketiranih, ki so v celoti in pravilno izpolnili anketni vprašalnik s področja prehoda mladih (družin) v samostojno stanovanje – reševanje stanovanjskega problema. Anketirani vključeni v vzorec se med seboj razlikujejo glede na spol, starost, dokončano stopnjo izobrazbe, zaposlitveni status, mesečni dohodek in kraj bivanja. V nadaljevanju vzorec podrobneje predstavljamo.

Naš vzorec sestavlja 88 oz. 53,66 % žensk in nekoliko manj moških. Teh je v našem vzorcu 76 oz. 46,34 %.

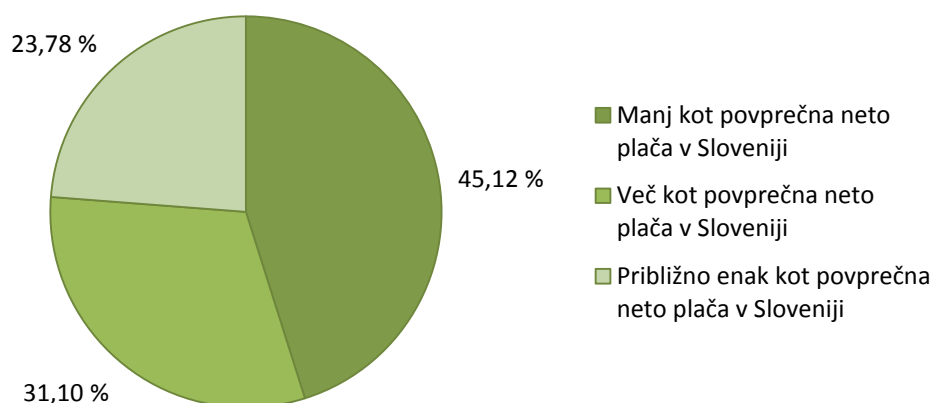
Anketirane smo glede na starost razdelili v štiri skupine, pri čemer mlade v skladu z definicijo, ki jo je podal Stanovanjski sklad RS za mlade družine<sup>73</sup>, uvrščamo vse anketirane stare do 35 let. Med mlade (družine) torej v našem vzorcu prištevamo 25 oz. 15,24 % anketiranih starih do 20 let in 86 oz. 52,44 % anketiranih starih od 21 do 35 let. V vzorec imamo vključenih še 32 oz. 19,51 % anketiranih starih od 36 do 50 let in pa 21 oz. 12,80 % anketiranih starih več kot 50 let.

Glede na izobrazbo anketirani tvorijo normalno porazdelitev. 17 oz. 10,37 % anketiranih ima zaključeno osnovno šolo ali manj, 21 oz. 12,80 % anketiranih ima zaključeno srednjo poklicno izobrazbo (dva ali triletni programi), 40 oz. 24,39 % anketiranih ima zaključeno srednjo tehniško izobrazbo (programi 3+2 ali štiriletni program), največ 44 oz. 26,83 % anketiranih ima zaključeno višjo ali visoko izobrazbo, nato dalje 24 oz. 14,63 % anketiranih univerzitetno izobrazbo in 18 oz. 10,98 % anketiranih pa specializacijo, magisterij ali doktorat.

Večina anketiranih je zaposlenih (88 oz. 53,66 % vseh anketiranih). Sledijo brezposelni (30 oz. 18,29 % vseh anketiranih), študentje oz. dijaki (24 oz. 14,63 %) in anketirani z drugim statusom (22 oz. 13,41 % vseh anketiranih).

V vzorec vključeni anketirani se med seboj razlikujejo tudi glede na dohodek. 74 oziroma 45,12 % anketiranih navaja, da njihov dohodek nižji od povprečne neto mesečne plače v Sloveniji iz meseca aprila 2016. Ta znaša približno 1.021 €/mesec. 51 oz. 31,10 % anketiranih nadalje navaja, da je njihov dohodek višji od navedene povprečne mesečne neto plače. Ostalih 39 oz. 23,78 % anketiranih ima glede na navedeno dohodek približno enak povprečni neto mesečni plači v Sloveniji. Sestava anketiranih glede na dohodek je prikazana na Sliki 1.

**Slika 1: Sestava anketiranih glede na dohodek**



V vzorec vključeni anketirani bivajo na različnih območjih, pri čemer ločimo območja z manj kot 10.000 prebivalci (ruralna območja) in območja z več kot 10.000 prebivalci (urbana področja). Iz vsake oblikovane skupine izhaja točno polovica anketiranih, torej 82 oz. 50 % vseh anketiranih.

#### 4. RAZISKOVALNE HIPOTEZE

**Hipoteza :** Država bi morala z regulativnimi ukrepi (kot so zakoni, pravilniki, uredbe ipd.) olajšati mladim (družinam) prehod v samostojno bivanje v nepremičnini. V okviru hipoteze ugotavljamo ali anketirani vidijo državo kot ključnega akterja pri reševanju stanovanjskih problemov mladih (družin) in s katerimi ukrepi bi država lahko olajšala mladim (družinam) prehod v samostojno bivanje. Na hipotezo odgovarjamo z obdelavo podatkov dvanajstega in trinajstega anketnega vprašanja.

Da bi lažje testirali veljavnost zastavljene hipoteze, smo jo v nadaljevanju razčlenili na dve podhipotezi (H1.1 in H1.2). Na tak način lahko podrobneje ugotavljamo, ali anketirani kot akterja za reševanje

<sup>73</sup> Mlada družina je življenjska skupnost obeh ali enega izmed staršev z vsaj enim ali več otroki, posvojenci ali pastorki, v kateri nobeden od staršev ni star več kot 30 let ne glede na starost otrok oziroma do 35 let, če še noben otrok ni šoloobvezen.

stanovanjskih problemov mladih (družin) v veliki meri vidijo državo in ali anketirani med ukrepi, s katerimi bi država lahko mladim (družinam) olajšala prehod v samostojno bivanje, izpostavljajo regulativne ukrepe (zakone, pravilnike, uredbe ipd.). Pri izbranih podhipotezah prikazali tudi statistično značilne vplive glede na spol, izobrazbo, status, dohodek in kraj bivanja.

**Podhipoteza 1.1 (H1.1):** Kot akterja za reševanje stanovanjskih problemov mladih (družin) anketirani v veliki meri vidijo državo.

Uvodoma smo izvedli preizkus hipoteze enake verjetnosti, in sicer s preizkusom ugotavljamo, ali so v osnovni množici kategorije spremenljivk enako zastopane. Preizkus smo izvedli s Hi-kvadrat testom, in sicer želimo dokazati ali med teoretičnimi in dejanskimi frekvencami obstajajo statistično pomembne razlike. Rezultati pa so prikazani v Tabeli 1. Iz prikazanih rezultatov izhaja, da v osnovni množici v odgovorih anketiranih o primarnem akterju za reševanje stanovanjskih problemov mladih (družin), obstajajo statistično značilne razlike ( $p < 0,05$ ). Na podlagi te ugotovitve zavračamo hipotezo enake verjetnosti in sprejmemo nasprotno hipotezo, da vsi odgovori v osnovni množici niso enako verjetni oz. pogosti.

*Tabela 1: Hi-kvadrat preizkus enake verjetnosti – akterji reševanja stan. problemov*

<b>Akterji reševanja stanovanjskih problemov mladih (družin)</b>	<b><i>p</i></b>
Vsak posameznik samostojno	0,000 ***
Oba partnerja v zvezi enakovredno	0,000 ***
Moški partner v družni	0,000 ***
Razširjena družina (starši, stari starši, bratje/sestre idr.)	0,000 ***
Nevladne organizacije	0,001 **
Država	0,000 ***
Evropska unija	0,000 ***
Banke z ugodnimi krediti	0,000 ***

*Opomba:* \*  $p < 0,05$ , \*\*  $p < 0,01$ , \*\*\*  $p < 0,001$

Nadalje smo izvedli frekvenčno analizo, da bi dobili vpogled v mnenje o primarnem akterju za reševanje stanovanjskih problemov mladih (družin). Izračunane srednje vrednosti odgovorov na pet stopenjski lestvici kažejo, da anketirani v največji meri kot akterja za reševanje stanovanjskih problemov mladih (družin) vidijo banke z ugodnimi krediti. Izračunana srednja vrednost za banke tako znaša 3,90. 117 oz. 71,34 % vseh anketiranih meni, da so banke pristojni ali povsem pristojni akter za reševanje stanovanjskih problemov mladih (družin). Drugo največjo srednjo vrednost (3,87) smo izračunali za oba partnerja v zvezi enakopravno kot ključna akterja za reševanje stanovanjskih problemov mladih (družin). 115 oz. 70,12 % vseh anketiranih meni, da sta oba partnerja v zvezi enakopravno pristojna ali povsem pristojna za reševanje stanovanjskih problemov mladih (družin). 3,82 je bila tretja najvišja izračunana srednja vrednost, in sicer za vsakega posameznika samostojno kot akterja za reševanje stanovanjskih problemov mladih (družin). 124 oz. 75,61 % vseh anketiranih meni, da je vsak posameznik samostojno pristojen ali povsem pristojen za reševanje stanovanjskih problemov mladih (družin).

Tabela 2: Frekvence veljavnosti trditev – akterji reševanja stan. problemov

Stopnja pristojnosti		Sploh ni pristojen	Ni pristojen	Niti ni nepristojen niti pristojen	Pristojen	Povsem pristojen	SKUPAJ	$\bar{x}$
<b>Problemov mladih (družin)</b>								
<b>Akterji reševanja stanovanjskih problemov mladih (družin)</b>								
Vsak posameznik samostojno	f	7	12	21	88	36	164	3,82
	f [%]	4,27	7,32	12,8	53,66	21,95	100	
Oba partnerja v zvezi enakovredno	f	1	8	40	78	37	164	3,87
	f [%]	0,61	4,88	24,39	47,56	22,56	100	
Moški partner v družni	f	10	37	68	44	5	164	2,98
	f [%]	6,1	22,56	41,46	26,83	3,05	100	
Razširjena družina	f	21	54	42	37	10	164	2,76
	f [%]	12,8	32,93	25,61	22,56	6,1	100	
Nevladne organizacije	f	27	40	39	44	14	164	2,87
	f [%]	16,46	24,39	23,78	26,83	8,54	100	
Država	f	10	21	38	71	24	164	3,48
	f [%]	6,1	12,8	23,17	43,29	14,63	100	
Evropska unija	f	11	25	44	58	26	164	3,38
	f [%]	6,71	15,24	26,83	35,37	15,85	100	
Banke z ugodnimi krediti	f	3	12	32	68	49	164	3,9
	f [%]	1,83	7,32	19,51	41,46	29,88	100	

Država kot osrednji akter zastavljen v podhipotezi je šele na četrtem mestu po dodeljeni stopnji pristojnosti (izračunana srednja vrednost na štiri stopenjski lestvici znaša 3,48). 95 oz. 57,92 % vseh anketiranih meni, da je država pristojna ali povsem pristojna za reševanje stanovanjskih problemov mladih (družin). V najmanjši meri anketirani pri reševanju stanovanjskih problemov mladih (družin) vidijo razširjeno družino (starši, stari starši, bratje/sestre idr.). Izračunana srednja vrednost za to skupino kot akterja za reševanje stanovanjskih problemov mladih (družin) znaša 2,76. Celotna frekvenčna razporeditev skupaj z izračunanimi srednjimi vrednostmi je prikazana v Tabeli 2.

V naslednjem koraku smo preverili ali se anketirani v izbranem odgovoru država razlikujejo glede na neodvisne spremenljivke spol, starost, dokončana stopnja izobrazbe, zaposlitveni status, mesečni dohodek in kraj bivanja. Uporabljen je bil Hi-kvadrat preizkus za preverjanje statistične značilnosti, pri čemer smo pri obdelavah upoštevali problem majhnih teoretičnih celičnih frekvenc. V primeru premajhnih teoretičnih celičnih frekvenc smo uporabili rezultate Kullbackovega  $2\hat{I}$  preizkusa. Statistične značilnosti smo ugotovili le v povezavi izobrazbo, rezultati obdelav pa so prikazani v nadaljevanju.

Ugotavljamo torej, da smo za državo kot akterja za reševanje stanovanjskih problemov mladih (družin) glede na izobrazbo anketiranih izračunali statistično značilnost nižjo od mejne vrednosti 0,05 ( $p = 0,019$ ). S tem smo dokazali, da pripisovanje pristojnosti državi za reševanje stanovanjskih problemov mladih (družin) glede na izobrazbo anketiranih obstajajo statistično značilne razlike. Iz frekvenčne analize težko razberemo jasn vzorec, tako da smo anketirane po izobrazbi nadalje razvrstili v dve skupini. Prvo skupino predstavljajo anketirani z zaključeno osnovnošolsko ali nižjo izobrazbo, srednjo poklicno izobrazbo in srednjo tehniško izobrazbo. Drugo skupino sestavljajo anketirani z višjo ali visoko izobrazbo, univerzitetno izobrazbo, specializacijo, magisterijem ali doktoratom. Srednja vrednost odgovorov za prvo skupino anketiranih (nižje izobraženi) za državo kot akterja za reševanje stanovanjskih problemov mladih (družin) znaša 3,49. Srednja vrednost odgovorov za drugo skupino anketiranih (višje izobraženi) za državo kot akterja za reševanje stanovanjskih problemov mladih (družin) znaša 3,45. Na podlagi tega torej ugotavljamo, da v povprečju nižje izobraženi nekoliko višje ocenjujejo pristojnost države kot akterja za reševanje stanovanjskih problemov mladih (družin). Celotna frekvenčna razporeditev skupaj z izračunanimi srednjimi vrednostmi je prikazana v Tabeli 3.

Tabela 3: Frekvenca – država kot akter reševanja stan. problemov glede na izobrazbo

Izobrazba	Osnovna šola ali manj		Srednja poklicna izobrazba		Srednja tehniška izobrazba		Višja ali visoka izobrazba		Univerzitetna izobrazba		Specializacija, magistriraj ali doktorat	
Država kot akter reševanja stanovanjskih problemov mladih (družin)	f	f[%]	f	f[%]	f	f[%]	f	f[%]	f	f[%]	f	f[%]
Sploh ni pristojna	0	0,00	0	0,00	6	15,00	3	6,82	1	4,17	0	0,00
Ni pristojna	4	23,53	1	4,76	1	2,50	6	16,64	4	16,67	5	27,78
Niti ni pristojna, niti je pristojna	5	29,41	7	33,33	9	22,50	7	15,91	6	25,00	4	22,22
Je pristojna	8	47,03	9	42,86	16	40,00	23	52,27	11	45,83	4	22,22
Povsem je pristojna	0	0,00	4	19,05	8	20,00	5	11,36	2	8,33	5	27,78
SKUPAJ	17	####	21	100,00	40	100,00	44	100,00	24	100,00	18	100,00
SREDNJA VREDNOST ( $\bar{x}$ )	3,24		3,76		3,47		3,48		3,37		3,5	

Na podlagi prikazanih izračunov raziskovalno hipotezo **H1.1 potrdimo**. Anketirani v veliki meri vidijo državo kot akterja za reševanje stanovanjskih problemov mladih (družin). Pri tem v povprečju statistično pomembno nižje izobraženi nekoliko višje ocenjujejo pristojnost države kot akterja za reševanje stanovanjskih problemov mladih (družin).

**Podhipoteza 1.2 (H1.2):** Anketirani med ukrepi, s katerimi bi država lahko olajšala mladim (družinam) prehod v samostojno bivanje, izpostavljajo regulativne ukrepe (zakone, pravilnike, uredbe ipd.).

Uvodoma smo izvedli preizkus hipoteze enake verjetnosti, in sicer s preizkusom ugotavljamo, ali so v osnovni množici kategorije spremenljivk enako zastopane. Preizkus smo izvedli s Hi-kvadrat testom, in sicer želimo dokazati ali med teoretičnimi in dejanskimi frekvencami obstajajo statistično pomembne razlike. Rezultati pa so prikazani v Tabeli 4. Iz prikazanih rezultatov izhaja, da v osnovni množici v odgovorih anketiranih o ukrepih, s katerimi bi država lahko olajšala mladim (družinam) prehod v samostojno bivanje, obstajajo statistično značilne razlike ( $p < 0,05$ ). Na podlagi te ugotovitve zavračamo hipotezo enake verjetnosti in sprejmemo nasprotno hipotezo, da vsi odgovori v osnovni množici niso enako verjetni oz. pogosti.

Tabela 4: Hi-kvadrat preizkus enake verjetnosti – ukrepi reševanja stan. problemov

Ukrepi za reševanje stanovanjskih problemov mladih (družin)	<i>p</i>	
Z vzpostavitev sistema neprofitnih najemov/nakupov nepremičnin	0,000	***
S povečanjem dejavnosti Stanovanjskega sklada Republike Slovenije	0,000	***
S pridobivanjem sredstev iz Evropske unije	0,000	***
Z direktnim financiranjem mladih (družin) za reševanje stanovanjske problematike	0,000	***
Z ustreznimi zakoni s področja nepremičnin	0,000	***
Z vzpostavitev sistema najemniških stanovanj/hiš	0,000	***
Z ustreznimi zakoni s področja zaposlovanja	0,000	***
Z omogočitvijo ugodnih varčevanj in kreditov	0,000	***

Opomba: \*  $p < 0,05$ , \*\*  $p < 0,01$ , \*\*\*  $p < 0,001$

Nadalje smo izvedli frekvenčno analizo, da bi dobili vpogled v mnenje o ukrepih, s katerimi bi država lahko olajšala mladim (družinam) prehod v samostojno bivanje. Izračunane srednje vrednosti odgovorov na pet stopenjski lestvici kažejo, da anketirani kot najustreznejši ukrep za olajšanje mladim (družinam) prehod v samostojno bivanje navajajo omogočitev ugodnih varčevanj in kreditov. Z ukrepom se strinja ali popolnoma strinja 129 oz. 78,66 % vseh anketiranih, izračunana srednja vrednost pa znaša 4,22. Drugo največjo srednjo vrednost (4,13) smo izračunali za ukrepa vzpostavitev sistema najemniških stanovanj/hiš (z ukrepom se strinja ali popolnoma strinja 129 oz. 78,66 % anketiranih) in sprejetje ustreznih zakonov s področja zaposlovanja (z ukrepom se strinja ali popolnoma strinja 125 oz. 76,22 % anketiranih). Z izračunano srednjo vrednostjo 4,03 sledi ukrep sprejetja zakonov s področja nepremičnin,

z ukrepom se strinja ali popolnoma strinja 122 oz. 74,39 % vseh anketiranih. Celotna frekvenčna razporeditev skupaj z izračunanimi srednjimi vrednostmi je prikazana v Tabeli 5.

*Tabela 5: Frekvence strinjanja z ukrepi reševanja stan. problemov*

Stopnja strinjanja		Sploh se ne strinjam	Se ne strinjam	Niti ni se ne strinjam, niti se strinjam	Se strinjam	Povsem se strinjam	SKUPAJ	$\bar{x}$
Ukrepi za reševanje stanovanjskih problemov mladih (družin)								
Z vzpostavitvijo sistema neprofitnih najemov/nakupov nepremičnin	f	7	18	15	73	51	164	3,87
	f [%]	4,27	10,98	9,15	44,51	31,10	100,00	
S povečanjem dejavnosti Stanovanjskega sklada RS	f	0	18	29	62	55	164	3,94
	f [%]	0,00	10,98	17,68	37,80	33,54	100,00	
S pridobivanjem sredstev iz Evropske unije	f	5	11	29	65	54	164	3,93
	f [%]	3,05	6,71	17,68	39,63	32,93	100,00	
Z direktnim financiranjem mladih (družin) za reševanje stanovanjske problematike	f	3	19	25	52	65	164	3,96
	f [%]	1,83	11,59	15,24	31,71	39,63	100,00	
Z ustreznimi zakoni s področja nepremičnin	f	1	15	26	58	64	164	4,03
	f [%]	0,61	9,15	15,85	35,37	39,02	100,00	
Z vzpostavitvijo sistema najemniških stanovanj/hiš	f	2	10	23	58	71	164	4,13
	f [%]	1,22	6,10	14,02	35,37	43,29	100,00	
Z ustreznimi zakoni s področja zaposlovanja	f	1	15	23	48	77	164	4,13
	f [%]	0,61	9,15	14,02	29,27	46,95	100,00	
Z omogočitvijo ugodnih varčevanj in kreditov	f	3	10	22	42	87	164	4,22
	f [%]	1,83	6,10	13,41	25,61	53,05	100,00	

V naslednjem koraku smo preverili ali se anketirani v mnenju, da bi država lahko z regulativnimi ukrepi (zakoni) olajšala mladim (družinam) prehod v samostojno bivanje, razlikujejo glede na neodvisne spremenljivke spol, starost, dokončana stopnja izobrazbe, zaposlitveni status, mesečni dohodek in kraj bivanja. Uporabljen je bil Hi-kvadrat preizkus za preverjanje statistične značilnosti, pri čemer smo pri obdelavah upoštevali problem majhnih teoretičnih celičnih frekvenc. V primeru premajhnih teoretičnih celičnih frekvenc smo uporabili rezultate Kullbackovega  $2\hat{I}$  preizkusa. Statistične značilnosti smo ugotovili:

- Med ukrepom vzpostavitve ustreznih zakonov s področja nepremičnin v povezavi s starostjo anketiranih in
- Med ukrepom vzpostavitve ustreznih zakonov s področja zaposlovanja v povezavi z izobrazbo anketiranih.

Ugotavljamo, da smo za ukrep vzpostavitve ustreznih zakonov s področja nepremičnin (s čemer bi država lahko olajšala mladim (družinam) prehod v samostojno bivanje) glede na starost anketiranih izračunali statistično značilnost nižjo od mejne vrednosti 0,05 ( $p = 0,015$ ). S tem smo dokazali, da med vzpostavitvijo ustreznih zakonov s področja nepremičnin (s čemer bi država lahko olajšala mladim (družinam) prehod v samostojno bivanje) glede na starost anketiranih obstajajo statistično značilne razlike. Iz izračuna srednjih vrednosti in frekvenčne analize izhaja, da stari od 20 do 50 let v največji meri podpirajo ureditev področja z vzpostavitvijo nepremičninskih zakonov. Srednja vrednost odgovorov za obe navedeni starostni skupini znaša 4,22. 70 oz. 81,39 % vseh anketiranih starih od 21 do 35 let se strinja ali popolnoma strinja da je vzpostavitev zakonov s področja nepremičnin ustrezen ukrep, s katerim bi država lahko olajšala mladim (družinam) prehod v samostojno bivanje. Podobnega mnenja so stari od 36 do 50 let, in sicer se 21 oz. 65,63 % vseh anketiranih iz te starostne skupine strinja ali popolnoma strinja z navedenim ukrepom. V nekoliko manjši meri se z ukrepom strinjajo stari do 20 let (srednja vrednost odgovorov na pet stopenjski lestvici znaša 4,16) in starejši od 50 let (srednja vrednost



odgovorov znaša 3,52). Celotna frekvenčna razporeditev skupaj z izračunanimi srednjimi vrednostmi je prikazana v Tabeli 6.

*Tabela 6: Frekvenca – vzpostavitev ustreznih nepremičninskih zakonov glede na starost*

Starost \ Ukrep: ustrezni zakoni s področja nepremičnin	Do 20 let		Od 21 do 35 let		Od 36 do 50 let		Več kot 50 let	
	f	f [%]	f	f [%]	f	f [%]	f	f [%]
Sploh se ne strinjam	0	0,00	1	1,16	0	0,00	0	0,00
Ne strinjam se	2	8,00	7	8,14	4	12,50	2	9,52
Niti se ne strinjam, niti se strinjam	2	8,00	8	9,30	7	21,88	9	42,86
Strinjam se	11	44,00	26	30,23	14	43,75	7	33,33
Popolnoma se strinjam	10	40,00	44	51,16	7	21,88	3	14,29
SKUPAJ	25	100,0	86	100,0	32	100,0	21	100,0
SREDNJA VREDNOST ( $\bar{x}$ )	4,16		4,22		4,22		3,52	

Nadalje ugotavljamo, da smo za ukrep vzpostavitve ustreznih zakonov s področja nepremičnin (s čemer bi država lahko olajšala mladim (družinam) prehod v samostojno bivanje), glede na izobrazbo anketiranih, izračunali statistično značilnost nižjo od mejne vrednosti 0,05 ( $p = 0,015$ ). S tem smo dokazali, da za ukrep vzpostavitve ustreznih zakonov s področja nepremičnin (s čemer bi država lahko olajšala mladim (družinam) prehod v samostojno bivanje) glede na izobrazbo anketiranih obstajajo statistično značilne razlike. Iz frekvenčne analize izhaja, da se v največji meri z navedenim ukrepom strinjajo anketirani, ki imajo osnovnošolsko ali nižjo izobrazbo. Sledijo anketirani, ki so zaključili specializacijo, magisterij ali doktorat. 17 oz. 94,45 % vseh anketiranih s to stopnjo izobrazbe se strinja ali popolnoma strinja z navedenim ukrepom. Ukrep v večji meri podpirajo še anketirani, ki imajo zaključeno srednjo poklicno izobrazbo. 16 oz. 76,19 % vseh anketiranih s to stopnjo izobrazbe se strinja ali popolnoma strinja z navedenim ukrepom. Celotna frekvenčna razporeditev skupaj z izračunanimi srednjimi vrednostmi je prikazana v Tabeli 7.

*Tabela 7: Frekvenca – vzpostavitev ustreznih zaposlitvenih zakonov glede na izobrazbo*

Izobrazba \ Ukrep: ustrezni zakoni s področja zaposlovanja	Osnovna šola ali manj		Srednja poklicna izobrazba		Srednja tehniška izobrazba		Višja ali visoka izobrazba		Univerzitetna izobrazba		Specializacija, magisterij ali doktorat	
	f	f [%]	f	f [%]	f	f [%]	f	f [%]	f	f [%]	f	f [%]
Sploh se ne strinjam	0	0,00	0	0,00	0	0,00	0	0,00	0	0,00	1	5,56
Ne strinjam se	5	29,41	1	4,76	2	5,00	6	13,64	1	4,17	0	0,00
Niti se ne strinjam, niti se strinjam	3	17,65	4	19,05	7	17,50	5	11,36	4	16,67	0	0,00
Strinjam se	6	35,29	2	9,52	13	32,50	14	31,82	6	25,00	7	38,89
Popolnoma se strinjam	3	17,65	14	66,67	18	45,00	19	43,18	13	54,17	10	55,56
SKUPAJ	17	100,00	21	100,00	40	100,00	44	100,00	24	100,00	18	100,00
SREDNJA VREDNOST ( $\bar{x}$ )	3,41		4,38		4,18		4,05		4,29		4,39	

Na podlagi prikazanih izračunov raziskovalno hipotezo H1.2 potrdimo. Anketirani res med ukrepi, s katerimi bi država lahko olajšala mladim (družinam) prehod v samostojno bivanje, izpostavljajo regulativne ukrepe (ureditev zakonov). Pri tem stari od 20 do 50 let v največji meri podpirajo ureditev področja z vzpostavitvijo nepremičninskih zakonov in pa najmanj in najbolj izobraženi anketirani.

Hipotezo, ki pravi, da bi država morala z regulativnimi ukrepi (kot so zakoni, pravilniki, uredbe ipd.) olajšati mladim (družinam) prehod v samostojno bivanje v nepremičnini potrdimo. Ugotovili smo, da anketirani v veliki meri vidijo državo kot akterja za reševanje stanovanjskih problemov mladih (družin), pri tem pa v povprečju nižje izobraženi nekoliko višje ocenjujejo pristojnost države kot akterja za reševanje stanovanjskih problemov mladih (družin). Anketirani tudi med ukrepi, s katerimi bi država lahko olajšala mladim (družinam) prehod v samostojno bivanje, izpostavljajo regulativne ukrepe

(ureditev zakonov), ukrepu pa so najbolj naklonjeni stari od 20 do 50 let in pa najmanj in najbolj izobraženi anketirani.

## 5. ZAKLJUČEK

Gospodarske, kulturne, politične, družbene in demografske spremembe pomembno vplivajo na pomen tradicionalne družine in medgeneracijske odnose. Vse to pa se kaže v problemu skupnega gospodinjstva oziroma podaljšanega sobivanja mladih(družin) in staršev. Večina mladih, ki živi v skupnem gospodinjstvu s starši, si kljub temu, da se dobro razumejo želijo iti »na svoje«. Pri tem pričakujejo večjo pomoč države. Čeprav ni logično, da bi bila država odgovorna za reševanje stanovanjskega problema mladih (družin), saj nima vpliva na to, kako se bodo mladi odločili za šolanje, kako bodo ravnali s svojimi dohodki, ali se želijo zaposliti in podobno. Vsekakor pa bi država s svojimi regulativnimi ukrepi (sprememba zakonov, uredb, pravilnikov in ipd.) in pravično porazdeljeno socialno pomočjo med mlade (družine) in stare, lahko vodila bolj pravično stanovanjsko politiko.

Prenaseljenost stanovanj povzroča slabo počutje, zdravstvene težave in podobno (Sendi, 2013), zato mora Slovenija na tem področju najhitreje ukrepati. Pri tem pa mora upoštevati najnovejše pristope v zvezi z načrtovanjem stanovanj, ekologijo, varčnostjo gradenj in smotrno izrabo prostora in zagotavljati ustrezen standard.

V današnjem času pa se koraki pri tradicionalnem prehajanju v samostojno življenje pojavljajo v nekoliko drugačnem vrstnem redu, kot je bilo značilno za starejše generacije, najprej dokončanje šole, nato zaposlitev na stabilnem trgu delovne sile, pridobitev lastne nepremičnine in šele nato oblikovanje družine (princip »najprej štalca pol pa kravca«).

Pomembno pa je tudi, da država ne bi smela pozabiti pomen osamosvajanja glede na stopnjo rodnosti v državi, saj vemo da se v Sloveniji prebivalstvo stara.

Mišljenje mladih je da je bilo odraščanje starejše generacije lažje, saj je to bil takrat družbeni projekt, ki je zagotavljal vse, kar je pomembno za osamosvojitve: služba, stanovanje in kasneje pokojnina). Tako mladi danes gledajo na družbo kot na nezanesljivega oz. včasih celo na zahrbtnega partnerja s katerim je treba vnaprej s formalno-pravno pogodbo doreči pomembne točke za sodelovanje, saj zaupanje in dobri odnosi nikakor ne zadostujejo več. Tako zanje spet postanejo pomembni starši, saj v večini primerov lahko računajo na njihovo pomoč. Zato se za sobivanje generacij v današnjem času zdi, da to ni izraz slabe vzgoje ali razvajenosti mladih, ampak oblika dobrega medgeneracijskega sodelovanja.

Anketirani v veliki meri vidijo državo kot akterja za reševanje stanovanjskih problemov mladih (družin), pri tem pa v povprečju nižje izobraženi nekoliko višje ocenjujejo pristojnost države kot akterja za reševanje stanovanjskih problemov mladih (družin). Anketirani tudi med ukrepi, s katerimi bi država lahko olajšala mladim (družinam) prehod v samostojno bivanje, izpostavljajo regulativne ukrepe (ureditev zakonov), ukrepom pa so najbolj naklonjeni stari od 20 do 50 let in pa najmanj in najbolj izobraženi anketirani. Poleg države anketirani kot akterja za reševanje stanovanjskih problemov mladih (družin) vidijo banke z ugodnimi krediti. Razumevanje bank kot akterja za reševanje stanovanjskih problemov mladih (družin) je nelogično, nerazumljivo. Stanovanjske kredite in namenska varčevanja v praksi skoraj izključno ponujajo poslovne banke na trgu. Cilj poslovnih bank je maksimizacija dobička, so izključno konkurenčno naravnane in v primeru da ne dosegajo ustreznih poslovnih rezultatov, s poslovanjem prenehajo (v praksi tudi v slovenskem prostoru poznani primeri umika bančnih podružnic tujih bank). Pričakovati da bodo poslovne banke prevzele socialno noto je neresno, pa tudi če so poslovne banke v državni lasti (npr. NLB d. d.). Zbrani odgovori lahko kažejo tudi na osnovna nepoznavanja vloge udeležencev na nepremičninskem trgu, kjer se večinoma financiranje res izvaja preko bančnih posojil.

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# **Increased terror threat and facility security's role in organizations**

Line Bøe Skreosen

Oslo and Akershus University College of Applied Sciences, Norway

E-mail: line.skreosen@hotmail.no

## **Abstract**

Security has always been a primary focus in facilities, and the ever-increasing risk of facilities becoming targets for terrorist acts makes the need for security even more critical. The purpose of the paper is to illuminate the role of facility management with the focus on security today and in conjunction with the increased risk of facilities becoming targets for terrorist attacks. Based on these findings, highlight aspects considered essential for facility security management today and in the future will be identified. After a thorough review of selected documents, some aspects related to today's facility security management were identified, and two findings were considered especially interesting: 1. Facility security management has been put in a stronger searchlight in organizations as a result of the increased terrorist threat in and around facilities. 2. Facility security management is taken seriously today more than ever, but it is still difficult to implement the security measures needed in organizations. One of the reasons is the huge cost linked to secure facilities against terrorist attacks. The results emphasize that safety in facilities has a great potential for improvement. Aspects that can be considered essential for facility security management today and in the future, can be presented using the model for design and evaluation of physical security systems presented by Garcia (2007). The model is continuous and includes four stages; identification, understanding, development and evaluation and reassessment.

**Keywords:** Facility management, Security, Model

## 1. Introduction

The safety of employees should be an issue of interest to all responsible businesses (Atkin, Brooks, 2015). Security management has always been considered as a major activity, and safety in buildings is, in a greater or lesser extent, always a relevant topic in organizations. In NS 3455, safety is classified as one of the six main building functions (Norsk Standard, 1993). This emphasizes the importance of security among the many and complex tasks and responsibilities of facility managers.

Atkin and Brooks focus on the safety of employees, but the employees are not the only ones that need to be secured; everyone who uses the building should benefit from the safety work the facility manager is responsible for. An already difficult task may seem even harder when it not only embraces its own employees, but also known and unknown individuals as guests in different contexts (Sennewald, Bailie, 2015). In an increasingly globalized world, fear of insufficient security in constructions becomes greater every day. The people wandering in and out of the building do not need to be there for reasonable purposes - on the contrary - and this is something the daily users of the building are aware of.

In the media, special attention is paid to the terrorist attacks that have taken place in Western countries in recent years. The focus trigger the fear, and safety has therefore been put in a stronger spotlight by most people. I will not speculate on whether the fear of terror is exaggerated. I want to look at the role of facility security today in the context of the estimated *realistic* threat of terror in and around facilities.

The purpose of the paper is to illuminate different aspects of the role of facility security today. The focus will be directed specifically towards the changes that have manifested themselves in the light of the increased terror threat, and the goal is to arrive at some crucial aspects of safety management today and in the future.

The choice of themes fell naturally to me, as I find the safety management within facility management very interesting. How social changes and trends contribute to the need for change, also within leadership, is a phenomenon that both astonishes and engages me. The fact that facility management as a subject field is extensive and nuanced, makes the theme even more exciting.

Ahead of writing this research paper, I am particularly curious about how the increased focus on terrorist acts can be linked to the role of facility security in organizations today. I want to identify some key aspects that emerge as important for the operation of security in buildings today and in the future using self-chosen literature. The assignment embraces several of the learning objectives within the subject Hard FM at HiOA, and topics such as technical systems, the need for technical infrastructure and facility management in a larger social perspective are affected in the text.

I have no practical experience within the operation of security in constructions - nor about terror and terrorism related to facilities. My prerequisites are limited to the theoretical knowledge I have acquired during my study period, as well as through thorough reviews of relevant literature, both ahead of and during the task writing.

## 2. Hypotheses

Prior the start of the actual document analysis, one of my hypotheses concerns that an increased terror threat towards buildings has made the role of security more important. People in all countries are aware of the increasing risk of facilities becoming terror targets, and facility managers are most likely feeling the pressure to manage the security even better than before.

Another hypothesis is that buildings in general are too poorly secured. However, it is difficult to say anything more detailed about whether buildings are secured well enough or not; the hypothesis is based on the belief that necessary actions in organizations are often shifted or neglected because narrow cost budgets and undervalued actuality of top managers make implementation of measures problematic.

It is difficult to say anything about which aspects that will be found as important for security management today and in the future before the analysis has begun. Nevertheless, it is possible to make some assumptions. I assume that facility security must be improved and that thinking in new lanes will be crucial for such an improvement. The reason why organizations often laggards the general development in society bases on their lack of daring and knowing how to move out their own organizational "bubble". Thinking new can pave the way for lots of new opportunities, also inside the area of security management.

Within facility management, processes are an important focus. My hypothesis is that security can be treated as a process, and I hope to find sources that can support this hypothesis and provide the basis for designing some significant aspects of security management today and in the future.

### 3. Theoretical reasons

Terror danger in buildings and the role of facility security are a theme that embraces an ocean of different issues, and is relevant to all owners of buildings. Terror has existed for a decade of years, but the meaning of the phenomenon has changed throughout history, as perceptions also change over time. Recent terror attacks are often attributed to the importance of defining the phenomenon, because it is these recent events that form our perceptions of it. There is no prevailing definition of terror today, but rather many different definitions that can make it somewhat difficult to understand what the term really embraces. (Howie, 2007)

According to Norwegian Law, terror act is "illegal use of, or threat of the use of, power or violence against persons or property, in an effort to put pressure on the country's authorities or population or society in general to achieve political, religious or ideological goals" (Law of 20 March 1998 No. 10 on Preventive Security Service. Own translation). The definition is both precise and easy to use, and the understanding of this will be an important backdrop for this paper.

Although terror is a known phenomenon and terrorist acts have been committed countless times, there are certain characteristics that appear different today compared to the past. This is due to the fact that the terrorist attacks have become more extensive and with more significant consequences, according to the UN (2013). Another development that is observed deals with the attack targets. A bigger focus is geared towards soft targets, goals that are vulnerable for various reasons (Moeller, 2016). Such vulnerability may, as an example, address the physical design of the facility or the normal usage of the facility. All facilities are potential victims of terrorist acts today, and security in facilities should therefore be highly prioritized by facility managers.

It is the facility's assets or resources that are the background for the need of security in facilities (Wiggins, 2010; Reid, 2005). Sennewald and Bailie (2015) believe that it is more than just the resources and staff of the facility that need to be secured; people who are not employed at the facility must be included in the calculation as well. This is something I wrote about initially. Then and Loosemore (2006, referenced in Lavy, Dixit, 2010) point out that there are various reasons that buildings are associated with risk and that these include the resources premises, staff, equipment and data, information and knowledge. This division is suitable when different facilities resources or assets are to be classified.

To be able to secure, you are dependent on knowing what security really means. Wiggins (2010) claims that security is about preventing. She points out that security exists because people often act different than what organizations want them to, and that security and security systems affect several components, including costs, time, convenience, flexibility and loss of privacy. The function of security in a facility therefore prevents the consequences of unwanted actions that may affect these components.

Sennewald and Bailie (2015) support and expand Wiggins' assertion of security and prevention, and believe that the security department can be divided into two subdivisions: One department for control or prevention of loss and one department for detection. This shows that prevention is not just about preventing, but also about detection of possible threats and the control of these.

The theoretical explanations guide the further text, and the understanding of and connection between terror and facilities security is decisive.

### 4. Method

This task is a document analysis/review. The decision on which research method I wanted to use was simple. This because I quickly discovered that my problem best can be illustrated using existing literature. Also in conjunction with the somewhat limited time perspective for the task, document analysis seemed like the optimum way to manage the task. It might be interesting to do a case study within the subject, but this would require considerably more time. A document analysis therefore fits the task better. It became even more convincing when the document searches gave countless relevant hits.

Sources that are used are either academic books, electronic sources or research articles, and all sources are selected because they address tasks-relevant topics. When I started searching for appropriate literature, I first searched through Emerald. This because I am more familiar with this page than I am with the other databases I have access to through HIOA. The search results were multiple, and I had to spend a lot of time scanning the subjects I found interesting and important for the task. Reading through articles went well, and I repeatedly found interesting references to other works within the many articles, which made the number of proper articles even bigger.

It is mainly through searches in Emerald and Google Scholar I have found my sources, but some electronic sources have been found by searching in common search engines. This assignment is based

mainly on theory taken from the books I have found and chosen, and electronic sources and articles can be considered as a supplement to these.

As I mentioned, the sources I have used are different, and this means that they may vary in validity too. The books I refer to appear to me to be very reliable, both because I am aware of the strict requirements that are imposed on the reliability of books and because the books are more recent (published after 2000). Obviously, there may be deviations in reliability, for example as a result of changes to laws or definitions presented in the books, but I choose to ignore this when I consider the quality of the selected books I have used in my study.

The research papers I refer to are academic of nature, but this does not necessarily mean that the sources are fully reliable. Research articles may have some limited validity, because a study itself often is limited, but also because the authors own opinions constitute a significant part of the content. Therefore, I choose to consider the articles as a good supplement to the theory of the books.

The electronic sources are carefully picked out. One should be careful using electronic sources, and I am aware of that. I have therefore only chosen sources with authors representing organizations that I think should qualify as reliable in this context.

It is worth adding that being critical is fundamental in research, but that there always can be limitations in the degree of reliability.

## 5. Results

The documents that are analyzed have many similarities. There is little variation in the view of the role of facility security in organizations today seen in the context of the increased terror threat. The main differences in the documents are the diverse themes the author/authors emphasizes in their work. Below, I present a few various points about the role of facility security in organizations today. The points show the connection between the facility security role and the increased terrorist threat, and are general points that have proven to be particularly eminent during the process of this literature review.

The increased terrorist threat has led to security being considered as more important and organizations take this seriously. Sennewald and Bailie (2015) write about how security has eventually taken place in the upper part of organizations and how safety has been put in a particularly strong spotlight after the events of September 11<sup>th</sup>, 2001. Wiggins' (2010) submission of a survey conducted in the UK also supports this: The company safety survey showed that 80% of the companies surveyed spend more money on security than they did five years earlier.

The results show that the importance of facility security is taken seriously, but probably not to the extent that is desirable – more attention should be paid. Although it appears that the terrorist focus has gained facility managers to open their eyes, it can be established that there is still a need for the focus on facility security to be increased. Hanford (2010) points out one of the reasons why safety should be put in a stronger spotlight; terror attacks have become more decentralized than before. Facility managers should, based on this decentralization, change strategic plans within security to meet the actual needs. Other reasons why the facility security focus should be enhanced is mentioned initially; the growing volume of consequences the terrorist attacks carry and new vulnerable targets (UN, 2013; Moeller, 2016).

One of the most salient reasons why development in facility security is a challenge to many organizations is dealing with the costs associated with implementing such security development measures, as I assumed prior the analysis. Whether something really is done depends on who carries the costs, writes Alexander (2004). It is for organizations as for most people; one would like to be paid in benefits even if one does not want to pay in money to make the benefit oneself. This may seem to be a major concern for the security of facilities, and a change in mind requires organizations to understand the undesirable consequences that can be avoided if security not only gets more attention, but also greater room for maneuver in organizations.

In order for organizations to be willing to provide more for better security, understanding of usefulness is a prerequisite. Alexander (2004) points at some of the benefits of a well-established security program in organizations: Assets are protected, business continuity is ensured, legal risk and insurance costs are reduced, and perhaps most importantly; the risk is reduced for customers and employees.

There is no reason to believe that the terror danger will decrease in the future. It is more likely to believe that it will only increase, and if possible, the attacks will carry greater consequences than what is considered realistic today. It is expected, according to the UN (2013), that weapons with potentially mass destruction, such as chemical weapons, will be put into use in the future. It is therefore important that organizations do not lose control of their security already at this point.

Summarized and put into context, the findings show that the increased terrorist threat have led organizations to take more control, but preventive measures must be implemented regularly and more often than it has been up until today. The future's need for well- functioning security systems will probably be significantly greater than it is today.

## 6. Discussion

Some of my hypotheses are in some way or another confirmed by the results. A hypothesis of mine was that an increased terror threat towards buildings has made the role of security more important, and this hypothesis is supported by my chosen literature. I have written about how both people in general and organizations are more conscious of the security needs of the present than ever before.

One of my hypothesis was that facilities, besides the increased focus on security, is to poorly secured. This assumption is a theme of many authors, and the literature I searched through assist this assumption. The literature did also acknowledge that the costs associated with implementing such security development measures is one reason why organizations development of security is slower than requisite, as I assumed prior the analysis.

In addition, I have found out that the terror threat against facilities most certainly will expand, like the dimension of the attacks. This makes security development not only economic expensive, but also outstandingly time-consuming. Organizations needs to perceive their necessity in security, and a detailed survey of the facility and its assets should be presented as soon as possible to avoid a bigger gap between needs and reality.

Even if I have gotten these hypotheses confirmed, I still want to make an exhaustive research later that can explain why the gap between security needs and organizational actions is as wide as it is.

I assumed that thinking new can change security management to the better and simpler. I have not found results that show that this is an important aspect. It is a general assumption, and maybe to general to be researched in the preferred way in this research. It could be possible to narrow it down to specific hypotheses, for example about thinking new when it comes to material choices in facilities to prevent terror attacks.

I have learned that one are aware that facility security has become more important in recent years due to the increased terrorist threat in and around buildings. Nevertheless, the need for security in facilities is larger than organizations want to admit and this need will only increase. What can and should facility managers do to accommodate the needs?

First and foremost, it is essential that the benefits associated with well-functioning security systems are recognized by organizations. It is necessary to understand the many and positive consequences that such systems contribute to all the facility's users. It may be hard to acknowledge that upgrades are necessary because it's hard to see the outcome, but simple to see the payments connected to it. A solution may be to develop new standards for safety. Laws that force organizations to act may be another solution. There is much that can be done, but the actual execution ultimately lends itself to the organizations - these are the ones who supervises facility security.

I wanted to find literature that could support my hypothesis about security treated as a process, and come up with some essential aspects of security management today and in the future. Garcia's book about Physical Protective Systems (PPS) contains descriptions of how organizations can use the model for design and evaluation of physical security systems (2007). The PPS model is a process, and for that reason, it aids my assumption about process thinking within security. The preparation of PPS is a process and can act as a precise and user-friendly guide to how facility security can be handled by organizations. I therefore wish to use the process as a foundation when I define various aspects that are essential for facility security management today and in the future. The model shows that security management can be handled as a process.

The process for design and evaluation of PPS starts with the phase for determining PPS objects. This phase is about understanding the facility and its characteristics. In this phase, the threat level is defined and different threat targets are identified. In the introduction, I pointed out that security is intended to protect the facility resources. To be able to protect, you must first know what to protect and this is what the first phase of the model can illustrate. (Garcia, 2007)

Therefore, in the first phase, it is necessary to identify what resources the facility has and to what extent these are valuable and worth protecting (Reid, 2005). Resources and their importance must be seen in connection with the facility as a whole. An overview of valuable resources and the different resources' different need for security will be a priceless activity on the road towards optimal facility security management. In this phase, it is possible to use

the resource section presented under the theoretical statements: Premises, staff, equipment and data and information and knowledge (Then, Loosemore, 2006 referred to in Lavy, Dixit, 2010). When one is aware of what needs to be secured, one needs to acknowledge the identified need for security. It may seem like this is the process most facility managers are supplanting. It does not help knowing what needs to be secured if you do not understand and familiarize yourself with the need for something to really be done.

The next phase of the PPS process includes the design of the system itself. The system is divided into three different functions: Detection, delay and response. It has already been mentioned that security includes the detection, control or delay of functions (Sennewald, Bailie, 2015), and the importance of these features is supported by Garcia's model for design and evaluation of PPS. Security systems do always have one of these features. Among other things, sensors, alarms and input controls are methods of detection. Methods for securing all three features must be intact and user-friendly at all times. (Garcia, 2007)

Phase Three in PPS design and evaluation is an analysis of physical security systems. During this phase, the organization must look at what have been successful about the security systems and what have been less successful. Analysis of security should be on all organizations' agenda. One of the reasons for this is that the need for security is constantly evolving. Another reason concerns that there always is a risk for errors in technical systems, and such errors can lead to fatal consequences and therefore need to be traced immediately.

The final phase of design and evaluation of PPS can be divided into two parts, depending on the analysis results from the previous phase. If the organization is satisfied with the results and safety can be defended as optimal, a functional and final design is about to become a reality. With final design, it is not thought that the design is set as the default for the future, but that the organization is satisfied with the functionality of the systems in light of today's needs. If the security at this time against presumption is too poor compared to what has been identified as necessary and the phase three analysis results are not as expected and desirable, a review of systems and functions must be done. In the redesign of PPS, the organization has to review the whole process again - from first to last phase. New reviews of the process will, from time to time, be necessary to ensure that the organization constantly has updated security systems that meet the needs and requirements the organization has at the time. (Garcia, 2007)

The phases of the design and evaluation model of PPS can convincingly represent significant aspects of facility security today and in the future. The first phase is about identifying and understanding. Second phase revolves around developing systems dedicated to the findings from the first phase. In the third phase, the organization analyzes the work done in the first and second stage. In the fourth phase, the organization determines whether it is satisfied with the results of the analysis or not, and depending on the answer to this question, either a final design is determined or a redesign completed. In summary, the process is about identifying, understanding, developing, evaluating and rethinking. These are activities I believe highlights which aspects of facility security management are important today and in the future. Particularly important is perhaps understanding - without understanding, the organization will not be able to develop its security.

## **7. Conclusion**

The research reveals that the role of facility security has changed, and it appears that facility managers underestimate or disprove the danger of their facilities being subjected to terrorist attacks, as assumed ahead of the analysis. The lack of preparedness can have fatal consequences for organizations. The theory about costs and action was confirmed; the main reason that facility security is not increasing to the same extent as the increasing risk of being a victim of terrorist attacks is due to organizations failing or not wanting to see the benefits of such systems because costs exceed what they consider reasonable. To reverse this trend, one might try to communicate the need better. The key itself lies in the lap of the organizations and their facility managers, because these are the ones that make the decisions regarding facility security.

As a conclusion, one can say that there are some aspects that should be considered particularly valuable in the field of building safety, including identification, understanding, development, evaluation and review. These aspects can be used in process thinking within security management, and are aspects that



will always be useful, independent of time and place. While it may seem virtually impossible for organizations to secure facilities against terror, there are many initiatives that can be made to improve security so that it appears as optimal in terms of the monetary resources available to the company.

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## **The influence of self and functional congruity on real estate purchase options in Slovenia**

Nataša Fabris

Student at Nova University, European Faculty of Law, Slovenia

E-mail: natassska@gmail.com

Bojan Grum

Institut of Real Estate Studies, Ljubljana, Slovenia

### **Abstract**

The article covers the influence of personal and functional congruity on preferences and real estate purchase options. Functional congruity means that the greater the congruity between the perceptible user properties of the dwelling (in terms of residential areas intended for sleep, daily living, eating and maintenance, the cost of the purchase and maintenance of the dwelling) and the purchaser's desired dwelling characteristics, the greater the likelihood that the purchaser will be motivated to purchase the dwelling concerned. By means of empirical research, researchers have determined that, in addition to the functional congruity, personal congruity or self-congruity also influences preferences and real estate selection. Self-congruity is defined as the degree of congruity between the image of the product and the purchaser's personality in terms of the symbolic meaning of the product. Self-congruity affects the selection of the product in a positive sense – namely, the greater the self-congruity with the image of the product, the more the purchaser is inclined to purchase the product. Self-congruity has several dimensions. There are at least three concepts of self-congruity that explain and predict the behaviour of the consumer: actual self-image, ideal self-image and social self-image (Sirgy, 1982, 1985). Sirgy also introduces a fourth concept – namely, the ideal social self-image (Sirgy, 1991). With our empirical research, we tried to determine whether there are any statistically significant differences between functional and personal congruity in connection with potential purchasers in Slovenia. We established that potential purchasers show statistically significant differences between personal and functional congruity. In addition, we determined that the most important of the three forms of self-congruity (actual, ideal and social self-congruity) in Slovenia is ideal self-congruity.

**Keywords:** functional congruity, actual self-congruity, ideal self-congruity, social self-congruity

## 1. UVOD

Izbira ali preferenca stanovanja je pozitivno povezana s funkcionalno kongruenco. Torej, večja kot je skladnost med zaznanimi stanovanjskimi uporabniškimi lastnostmi (kot je kvaliteta doma, v smislu s stanovanjskimi prostori, namenjenimi za spanje, dnevno bivanje, prehranjevanje in vzdrževanje, stroški za nakup in vzdrževanje stanovanja) in kupčevimi želenimi lastnostmi stanovanja, večja je verjetnost, da bo kupec motiviran za nakup dotičnega stanovanja.

Poleg funkcionalne kongruence so raziskave pokazale, da na kupca vplivajo tudi stopnja skladnosti med imidžem proizvoda in kupčevo samokongruenco (Sirgy, 1982, Sirgy in dr., 1997). Pri tem gre za simbolični pomen izdelka, to je kakšna je stereotipna predstava, ki jo imajo kupci o nekem proizvodu. Gre za skladnost med videzom proizvoda in osebnim konceptom kupca, to je samokongruenca. Samokongruenca vpliva na odnos napram proizvodu v smislu: večja kot je skladnost samokongruence z imidžem proizvoda, bolj je kupec nagnjen k nakupu tega proizvoda. Tudi stanovanje se smatra kot eden izmed osnovnih simbolov samega sebe (Cooper, 1974; Becker, 1977; Pratt, 1982; Nasar, 1988, 1989; Devlin, 1994), zato to vpliva tudi na potrošnikove preference in izbire pri nakupu nepremičnine. Kupci stanovanj lahko zaznavajo, kakšno je stanovanje oziroma soseska glede na to, katere so značilnosti prebivalcev, ki tam živijo. Na primer, pozitiven vpliva ima dejstvo, da so prebivalci neke soseske ljudje višjega socialnega statusa. To je tako imenovan imidž naseljenega prebivalstva (Stock, 1975; Haney in Knowles, 1978), ki je definiran kot stereotipna slika tipičnega lastnika ali prebivalca stanovanja, stanovanjskega kompleksa ali soseske (Stock, 1975; Gould in White, 1986; Levy, 2002). Na primer, stanovanje je lahko v očeh kupca več vredno zato, ker je prebivalec tega stanovanja višjega socialnega statusa. Stanovanje simbolizira tudi karakteristike lastnika stanovanja, kot so socialni status, osebne lastnosti, estetske preference in osebno zgodovino. Raziskave torej kažejo, da večja kot je skladnost med imidžem prebivalca stanovanja in osebnim konceptom kupca, večja je nagnjenost kupca k pozitivnemu odnosu oziroma k izbiri tega stanovanja. Skladnost se torej nanaša na samokongruenco. Kaže se tudi pomembna povezanost med kupčevim zadovoljstvom/nezadovoljstvom in faktorji, ki določajo kongruenco med osebnim imidžem kupca in imidžem aktualnega prebivalca stanovanja (Shaw, 1975; Becker, 1977; Heaton in dr., 1977; Fredrickson in dr., 1980; Rochberg – Halton, 1984; Devlin, 1994). Ugotovili so, da večja kot je kongruenca med osebnim imidžem kupca in imidžem prebivalstva stanovanja/soseske, večje je zadovoljstvo kupca. Preferenca in izbira stanovanja je pozitivno povezana s samokongruenco. Večja kot je skladnost med imidžem prebivalstva/stanovalcem stanovanja in osebnim konceptom kupca stanovanja, večja je verjetnost, da bo kupec preferiral stanovanje oziroma bil motiviran za nakup navedenega stanovanja.

Narava osebnega koncepta je večdimenzionalna. Obstajajo vsaj trije koncepti osebnega koncepta, ki razlagajo in napovedujejo obnašanje potrošnika. To so aktualni osebni imidž, idealni osebni imidž in socialni osebni imidž (Sirgy, 1982, 1985). Aktualni osebni imidž je definiran kot, kako kupci vidijo same sebe (Sirgy, 1982, 1985). Idealni osebni imidž je definiran kot, kako bi kupci radi videli same sebe (Sirgy, 1982, 1985). Socialno-osebni imidž pa je definiran s tem, kako bi kupci želeli biti videni s strani pomembnih skupin ljudi ali posameznikov, katere želijo impresionirati, na primer prijatelji, sorodniki, sodelavci, in drugi (Sirgy, 1982, 1985). Glede na predhodne navedbe imamo torej tudi tri tipe samokongruence: aktualna samokongruenca, idealna samokongruenca in socialna samokongruenca.

AKTUALNA SAMOKONGRUENCA se nanaša na stopnjo skladnosti med kupčevim aktualnim osebnim imidžem in imidžem stanovalca stanovanja, oziroma kot skladnost med tem, kako kupci trenutno vidijo same sebe v primerjavi z imidžem obstoječega stanovalca tega stanovanja. Psihologi imenujejo aktualni osebni imidž zasebni imidž, to je imidž, ki ga ima posameznik in s katerim se počuti varno, lahko bi rekli: »To (takšen) sem jaz.« Becker (1977) pravi, da s stanovanjem definiramo samega sebe, zato so kupci stanovanj motivirani k ohranitvi osebne identitete z izbiro takega stanovanja, ki je skladno z njihovo identiteto (Rochberg-Halton, 1984; Sadalla in dr., 1987). Kupci se zato lahko počutijo nezadovoljni ob nakupu stanovanja, ki ne izraža njihove identitete. Gre za nagnjenost in motiviranost ljudi, da delujejo skladno s svojo osebno identiteto, ki se v literaturi osebne

in družbene psihologije imenuje »osebna konsistentna motivacija« (Lecky, 1945; Sirgy, 1986) ter tudi v literaturi trženjskih strategij (Sirgy, 1990; Johar in Sirgy, 1991; Sirgy in dr., 1992).

V nepremičninskih raziskavah raziskovalci preučujejo, kako se odvija proces izbiranja stanovanja, kako se stanovanja opremljajo in preoblikujejo na način, da so simbolično primerna njihovim stanovalcem (Cooper, 1974; Becker, 1977; Csikszentmihalyi in Rochberg – Halton, 1981; Fussel, 1983; Rochberg – Halton, 1984). Nekateri raziskovalci so preučevali, kako so določene soseske privlačne ljudem, ki imajo podobne vrednote in ozadje (Farley in dr., 1997; Galster in dr., 1999; Varady in Walker, 2000), podoben socialno- ekonomski status, stopnjo družinskega življenjskega cikla (Duncan in Reiss, 1956; Gans, 1962; Lindstrom, 1977), karierne vzorce (Whyte, 1956). Investitorji so skušali graditi taka stanovanja, ki so izražala družbeno in etnično identiteto (Katz, 1975; Warner, 1978; Hershberg, 1981; Niedenthal in Cantor, 1985; Nasar, 1989). Ravno tendenca k prebivanju v etnično homogenih soseskah kaže vpliv potrebe po osebni konsistentnosti. Torej ljudje so motivirani za izbiro stanovanj v tistih soseskah, v katerih živijo ljudje, podobni njim samim, kar je skladno z aktualnim osebnim imidžem (Lindstrom, 1997). Torej je tako odločitev za selitev kot tudi odločitev ostati v določeni soseski izražena z aktualno samokongruenco. Prebivalci, ki živijo v neki soseski, čutijo pripadnost tej soseski in se identificirajo s skupnostjo te soseske (Bardo, 1984; Hughey in Bardo, 1987; Puddifoot, 1994). Taka identifikacija s sosesko izraža visoko stopnjo kongruentnosti med aktualnim osebnim imidžem in imidžem prebivalstva te soseske. Če se prebivalec identificira z bližnjim sosedom, se zmanjša motiviranost za selitev, ker življenje v taisti soseski zadovoljuje potrebo po osebni konsistentnosti. In obratno, če se prebivalec ne identificira s bližnjimi sosedi, bo motiviran k selitvi v drugo sosesko, ki je bolj konsistentna z aktualnim imidžem prebivalca. Na primer, stanovalec, ki se vidi kot več vrednega v primerjavi z ostalimi, se bo počutil neprijetno v javnih (družbenih) stanovanjih in je s tem manj motiviran, da bi v tej soseski ostal dolgoročno (Freeman, 1998). Fernandez in Kulik (1981) sta ugotovila, da so prebivalci, ki imajo svoje dohodke nižje od povprečja soseske, nezadovoljni. To nezadovoljstvo izhaja iz tega, da prebivajo v soseski, kjer živijo ljudje, ki so drugačni (uspešnejši, premožnejši) od njih samih.

Aktualna samokongruenca vpliva na stanovanjske preference in izbire kot posledica potrebe po osebni konsistentnosti (koherentnosti). To pomeni, da bodo kupci, pri katerih se skladata imidž naseljenega prebivalstva in njihov aktualni osebni imidž, motivirani za nakup tega stanovanja zaradi potrebe po zadovoljitvi osebne konsistentnosti.

IDEALNA SAMOKONGRUENCA se nanaša na skladnost med kupčevim idealnim osebnim imidžem in imidžem trenutno naseljenega prebivalstva dotičnega stanovanja, oziroma skladnost s tem, kako bi kupec rad videl samega sebe v povezavi z imidžem stanovanja. Tudi idealni osebni imidž je del osebnosti. Mnogokrat obstaja prepad med aktualnim in idealnim osebnim imidžem. Idealni osebni imidž motivira obnašanje posameznika zaradi potrebe po samospoštovanju (Grubb in Grathwohl, 1967; Sirgy, 1986; Johar in Sirgy, 1991; Sirgy in dr., 1992). Ljudje imajo idealistične predstave o sebi in želijo te predstave realizirati, ker želijo povečati samospoštovanje (izbirajo taka stanovanja in prebivališča, ki so skladna z njihovo idealno samopodobo) (Cooper, 1974; Rakoff, 1977; Rossi in Weber, 1996). Težnja k izpolnitvi idealnega osebnega imidža, kot na primer posedovanje določenega stanovanja, je nekakšna potrditev lastnosti, da je oseba kompetentna, sposobna in vredna osebnost. Lastništvo nekega stanovanja ali druge vrste prebivališča je cilj velike večine ljudi, in dosežek tega v realnosti je pomembna indikacija osebnega uspeha in vodi k večjemu samospoštovanju (Rohe in Basolo, 1997). Raziskave so pokazale, da stanovanje / hiša in njene fizične lastnosti lahko vplivajo na povečanje kupčevega samospoštovanja (Ruesch in Kees, 1956; Becker, 1977; Devlin, 1994; Rossi in Weber, 1996; Rohe in Basolo, 1997). Različne raziskave so pokazale tudi, da je nepremičninsko obnašanje višjega družbenega razreda pogosto imitirano s strani drugih, nižjih družbenih slojev v razvitih državah (Becker, 1977; Zuiches, 1981; Lindstrom, 1997).

Idealna samokongruenca vpliva na stanovanjske preference in izbiro kot posredni učinek potrebe po večjem samospoštovanju. Torej kupci, katerih idealni osebni imidž se sklada z imidžem naseljenega

prebivalstva določenega stanovanja/soseske, preferirajo določeno stanovanje in so motivirani za nakup taistega stanovanja zaradi potrebe po samospoštovanju.

SOCIALNA SAMOKONGRUENCA se nanaša na skladnost med kupčevim socialno-osebnim imidžem in imidžem naseljenega prebivalstva. Socialno-osebni imidž je družbeni jaz oz. jaz v družbi na splošno. Prebivalci v nadstandardnih stanovanjih z luksuzno opremo želijo biti videni v očeh drugih kot mondeni, elegantni, nobel. To je njihov socialno-osebni imidž. Socialno-osebni imidž vpliva na obnašanje ljudi preko motiva družbene potrditve, to je, kako jih družba sprejema oziroma kot potrjenost s strani družbenega sloja (Johar in Sirgy, 1991; Sirgy in dr., 1992). Ljudje so motivirani k tistim dejanjem, s katerimi bodo v očeh drugih več vredni oziroma naj bi pridobili na vrednosti. Želijo si prejeti potrditev s strani družbe. Dejanja, ki niso konsistentna s socialno-osebnim imidžem, vodijo do neodobravanja s strani družbe. Zato so ljudje nagnjeni k tistim dejanjem, ki so konsistentna z njihovim socialno-osebnim imidžem, zato da bi pridobili pozitivne odzive s strani družbeno pomembnejših ljudi.

Raziskovalci pojasnjujejo, da izbira stanovanja kot tudi druga materialna posedovanja sporočajo drugim in samim sebi pomembnost (Nasar, 1989; Lindstrom, 1997; Klaufus, 2000). Ljudje so motivirani k zagotavljanju, da njihove stanovanjske izbire ustrezajo normam njihove referenčne družbene skupine (Becker, 1977; Niedenthal and Cantor, 1985; Klaufus, 2000). Obstaja več vidikov odločanja pri izbiri stanovanja. Interpretira se jih lahko v luči motiviranosti po socialnem odobravanju. Eden od teh vidikov je izbira sosese. Stanovanjski raziskovalci so dokumentirali vzorec migracije iz prebivališč na spodnjih ravneh lestvice vrednosti prebivališča v prebivališča v bolj izoliranih in manjših soseskah (npr. Packard, 1959; Strauss, 1959; Becker, 1977). Prebivalci želijo višji status ali iščejo pripadnost višjemu statusu sosedov, kar lahko povzroči tak vzorec migracij. Tudi druge vidike stanovanjskega izbire se lahko prav tako razlaga v luči socialnega odobravanja. Na primer kakovost šol/izobraževanja v soseski je pomemben dejavnik pri izbiri stanovanj. Tudi samo vrednotenje kakovosti šol je predmet družbenega vrednotenja. Poleg tega pa družbeno okolje lahko vpliva na izbiro šole neposredno. Potreba po socialni odobritvi lahko nadalje vpliva na izbiro stanovanj z določanjem pomena, pripisanega lastnostim neke določene sosese. Družbene norme vplivajo na obnašanje v katerikoli družbeni skupini. Takšne norme lahko določajo, katere sosedske lastnosti se iščejo. Zelene lastnosti, ki naj jih vsebuje soseska, zato lahko vplivajo na izbiro stanovanj pozitivno, medtem ko neželene lastnosti vplivajo na izbiro stanovanj negativno. Poleg tega posamezniki primerjajo svoje materialno bogastvo in svoj status z materialnim posedovanjem in statusom njihovih sosedov z namenom ocenjevanja, na kakšni ravni so v primerjavi z drugimi (Fernandez in Kulik, 1981).

Socialna samokongruenca vpliva na stanovanjskem področju na preference in izbiro stanovanja preko posrednih učinkov potrebe po socialni odobritvi. To je, kupci, ki bodo dosegli skladnost med imidžem prebivalcev stanovanja in njihovo socialno samopodobo, bodo z večjo verjetnostjo izražali preference po tem stanovanju in bodo bolj motivirani za nakup le tega, saj bodo na ta način izpolnili svojo potrebo po socialni odobritvi.

## 2. RAZISKOVALNE HIPOTEZE

V raziskavi nas je zanimalo, ali samokongruenca bistveno vpliva na izbor stanovanja oziroma ali sploh vpliva na izbor stanovanj. V nadalje smo proučevali, ob kakšnih pogojih ima funkcionalna kongruenca večji vpliv na izbor nepremičnine kot samokongruenca ter obratno ter kakšna je medsebojna povezanost osebne in funkcionalne kongruence pri nakupovanju nepremičnine. Še posebej nas je zanimal vpliv kongruence kupcev na preference in nakup nepremičnine v Sloveniji. Postavili smo naslednje hipoteze:

Hipoteza 1: Potencialni kupci izražajo statistično pomembne razlike med osebno in funkcionalno kongruenco.



Hipoteza 2: Potencialni kupci pri izbiri oz. preferenci stanovanjskih nepremičnin med tremi koncepti osebne kongruence (aktualni osebni imidž, idealni osebni imidž, socialno-osebni imidž) dajejo največji pomen aktualni samokongruenci, najmanjši pa socialni samokongruenci.

Hipoteza 3: Potencialni kupci pri izbiri oz. preferenci stanovanjskih nepremičnin pri konceptu funkcionalne kongruence dajejo znotraj opazovanih parametrov v okviru treh skupin dejavnikov (fizični, bivalno okolje, socialnoekonomski dejavniki) bistveno večji pomen fizičnim dejavnikom kot dejavnikom bivalnega okolja in socialno-ekonomskim dejavnikom.

Med demografskimi podatki pri izpolnjevanju vprašalnika so podatki o spolu, starosti, izobrazbi, družinskem statusu, o številu otrok v gospodinjstvu, ostali podatki: prebivanje v mestu, na obrobju mesta ali na podeželju, trenutno bivanje glede na lastništvo (lastno stanovanje, najemniško stanovanje, socialno stanovanje, pri sorodnikih), trenutno bivanje glede na tip nepremičnine (hiša, stanovanje), zaposlitev (zaposlen, brezposeln, študent), aktualna finančna sredstva, ki se namenjajo reševanju svojega stanovanjskega problema ter zadovoljstvo z aktualnim stanovanjskim statusom udeleženca ankete. Pri raziskovanju funkcionalne kongruence smo pri našem anketiranju upoštevali delitev dejavnikov (Grum, Temeljotov Salaj, 2010; Grum, Temeljotov Salaj, 2011), ki uporabniške lastnosti stanovanja, ki vplivajo na uporabnika, opredeli na tri glavne skupine:

- fizični dejavniki, ki vplivajo na želje in pričakovanja potencialnih kupcev, so: a) lokacija, velikost stanovanja, opremljenost z balkonom ali teraso, odprt pogled, mirno okolje stanovanja, naravna osvetljenost stanovanja, možnost centralnega ogrevanja; b) strukturni dejavniki nepremičnine: starost objekta in soseske, opremljenost stanovanja; c) razpoložljivost parkirišč; d) razpoložljivost interneta.
- dejavniki bivalnega okolja udeležencev, ki vplivajo na želje in pričakovanja potencialnih kupcev, so: a) bližina javnega prevoznega sredstva; b) dostopnost do prometnih povezav; c) bližina vrtcev in šol; d) bližina možnosti zaposlitve; e) bližina trgovin in nakupovalnih centrov; f) bližina zdravstvenih domov; g) bližina kulturnih ustanov;
- socialno - ekonomski dejavniki, ki vplivajo na želje in pričakovanja potencialnih kupcev, so: a) stroški vzdrževanja; b) dobri sosedski odnosi; c) občutek varnosti v soseski; d) občutek socialne pripadnosti soseski; e) občutek primerne ekonomskega statusa;

### 3. METODOLOGIJA

Osrednji raziskovalni instrument članka je lastno oblikovan anketni vprašalnik. Nastal je na podlagi študija literature in z uporabo raziskav in anketnih vprašanj iz sorodnega področja. Pridobljene podatke smo obdelali, analitične podatke pa smo nato uporabili za opisni in analitični pristop ter za kvantitativno in statistično urejanje pridobljenih podatkov. V raziskavi je sodelovalo 1026 udeležencev v Sloveniji. Anketni vprašalnik je vseboval 18 vprašanj, od teh so nekatera vprašanja vsebovala še 12 podvprašanj (drugi sklop). Prvi sklop anketnega vprašalnika je vseboval socialno - demografska vprašanja (deset vprašanj), ki smo jih uporabili iz dveh razlogov. Z demografsko analizo namreč odkrivamo značilnosti prebivalstva in lahko določimo potencialne kupce nepremičnine, hkrati pa nam demografska analiza služi kot sredstvo za poenotenje širšega geografskega območja.

Anketa je bila objavljena na spletni strani [www.lka.si](http://www.lka.si), udeležence pa smo pozvali k izpolnjevanju preko elektronske pošte. Anketa je zaprtega tipa. Metoda zbiranja podatkov je bila anonimna in se je izvajala v obdobju od marca do maja 2017. Pridobljene podatke smo analizirali s pomočjo statističnih metod za kvantitativno analizo podatkov s programom SPSS (IBM SPSS Statistics 21) in jih tabelarično uredili s programi MS Office.

Anketni vprašalnik se nato nadaljuje z naslednjim sklopom osmih vprašanj, od katerih ima vsako dvanajst podvprašanj. Vprašanja se nanašajo na dejavnike samokongruence in funkcionalne kongruence s fizičnimi dejavniki, dejavniki bivalnega okolja in socialno – ekonomskimi dejavniki. Na vsako vprašanje je bilo potrebno odgovoriti tako, da je udeleženec označil en odgovor od petih

možnih, ki so bili razporejeni z uporabo Likertove lestvice. Možni odgovori so bili: 1-sploh se ne strinjam, 2- ne strinjam se, 3- niti se ne strinjam niti se strinjam, 4- strinjam se, 5- povsem se strinjam. Udeleženec ankete je moral obvezno odgovoriti na vsako vprašanje, sicer ni mogel nadaljevati z izpolnjevanjem anketnega vprašalnika. Za vsa vprašanja v tem sklopu smo opravili teste Cronbach's Alpha, s katerimi smo ugotovili zanesljivost in interno konsistentnost navedenih vprašanj.

Hipoteze smo testirali s statističnim programom ANOVA. Pogoji za izvedbo ANOVE je homogenost variance, ki jo preverjamo s testom homogenosti variance. Z Brown – Forsythe testom preverimo predpostavko, da so variance enake. Je modifikacija Levene-testa. Oba testa pretvorita odvisne spremenljivke tako, da jih lahko uporabimo v ANOVA testu. Edina razlika med obema testoma je v tem, kako transformirata spremenljivke. Levenov test uporablja odklone od aritmetične sredine, kar rezultira v visoki navpičnosti seta podatkov, s čemer zlorabi predpostavko normalne porazdelitve. Brown – Forsythe test popravlja to strmino z uporabo odklonov od mediane skupine. Tako lahko naredimo ANOVO s transformiranimi odvisnimi spremenljivkami. Test homogenosti variance v naši raziskavi ni potrjen, zato smo si pomagali z Brown – Forsythe testom in z Welch testom za oceno enakosti aritmetičnih sredin. Ta dva testa ne predpostavljata homogenosti variance. Statistična značilnost je na stopnji 0,05, ko se zavrže ničelna hipoteza, da imajo skupine enake aritmetične sredine.

#### 4. REZULTATI IN INTERPRETACIJA

Hipoteza 1:

Skala S11.12.13 predstavlja samokongruenco, S14, S15, S16 in S 17 pa predstavljajo dejavnike funkcionalne kongruence. Ugotovili smo:

Obstaja statistično značilna razlika pri  $p < 0,001$  med skalama S11.12.13 in S14:  $F=36,451$ .

Obstaja statistično značilna razlika pri  $p < 0,001$  med skalama S11.12.13 in S15:  $F=40,023$ .

Obstaja statistično značilna razlika pri  $p < 0,001$  med skalama S11.12.13 in S16:  $F=28,446$ .

Obstaja statistično značilna razlika pri  $p < 0,001$  med skalama S11.12.13 in S17:  $F=28,449$ .

Na podlagi rezultatov ANOVE potrdimo našo hipotezo 1. Rezultati so zbrani v tabeli št. 1.

Tabela 1: Rezultati za S11.12.13 in S14.15.16.17

	Vsota srednjega kvadrata	Df	Srednji kvadrat	F	P
S14	53,711	4	13,428	<b>36,451</b>	<b>0,0000</b>
S15	65,588	4	16,397	<b>40,023</b>	<b>0,0000</b>
S16	71,359	4	17,840	<b>28,446</b>	<b>0,0000</b>
S17	70,112	4	17,528	<b>28,449</b>	<b>0,0000</b>

Pri funkcionalni kongruenci gre za psihološko oceno stanovanja, ki nastane na podlagi primerjave med uporabniškimi lastnostmi stanovanja z idealnimi lastnostmi stanovanja (Varvoglis in Sirgy, 1984; Sirgy in Johar, 1985a,b). Potencialni kupec pri tem upošteva kvaliteto stanovanja, cenovno raven, bližino stanovanja nakupovalnim centrom, razpoložljivost javnih dobrin (šole, avtobusne postaje, zdravstvo), finančne aranžmaje za nakup stanovanja (Howell in Frese, 1983; Luger, 1996; Vale, 1998). Ocenjevalni kriteriji so povezani z bistveno funkcijo samega stanovanja, pri čemer stanovanje zadovoljuje potrebe vsakodnevnega življenja kot so spanje, počitek, prehranjevanje (kuhinjske kapacitete, dostop do pitne vode, dostop do prehranjevalnih področij), vzdrževanje higiene (kopalnica, toaletni prostori), prebivanje (dnevna soba in druge možnosti). Finančna kongruenca vključuje tako stroške nakupa in uporabe nepremičnine kot funkcionalne koristi nepremičnine (Sirgy in Samli, 1985).

Ugotovljeno je, da večja kot je skladnost med zaznanimi stanovanjskimi uporabniškimi lastnostmi (kot je kvaliteta doma, v smislu s stanovanjskimi prostori, namenjenimi za spanje, dnevno bivanje, prehranjevanje in vzdrževanje, stroški za nakup in vzdrževanje stanovanja) in kupčevimi želenimi lastnostmi stanovanja, večja je verjetnost, da bo kupec motiviran za nakup tega stanovanja.

Poleg funkcionalne kongruence so raziskave pokazale, da na kupca vpliva tudi samokongruenca, in sicer kot stopnja skladnosti med imidžem proizvoda in kupčevo samokongruenco (Sirgy, 1982, Sirgy in dr., 1997). Pri tem gre za simbolični izgled produkta, to je kakšna je stereotipna predstava o proizvodu, ter nato preslikava imidža proizvoda na osebnost kupca, in posledično skladnost med videzom proizvoda in osebnim konceptom kupca.

Samokongruenca vpliva na odnos napram proizvodu v smislu: večja kot je skladnost osebne kongruence z imidžem proizvoda, bolj je kupec nagnjen k nakupu tega proizvoda. Tudi stanovanje se smatra kot eden izmed osnovnih simbolov samega sebe (Cooper, 1974; Becker, 1977; Pratt, 1982; Nasar, 1988, 1989; Devlin, 1994), zato to vpliva tudi na potrošnikove preference in izbire pri nakupu nepremičnine. Stanovanje simbolizira tudi karakteristike lastnika stanovanja, kot so socialni status, osebne lastnosti, estetske preference in osebno zgodovino. Večja kot je skladnost med imidžem prebivalstva/stanovalcev stanovanja in osebnim konceptom kupca stanovanja, večja je verjetnost, da bo kupec preferiral stanovanje oziroma bil motiviran za nakup navedenega stanovanja.

Poudariti pa je potrebno, da na preference pri izbiri in nakupovanju nepremičnine vplivata na potencialnega kupca tako funkcionalna kongruenca kot samokongruenca. V kolikšni meri vpliva na potencialnega kupca funkcionalna in v kolikšni meri samokongruenca, pa je odvisno predvsem od posameznega kupca in okoliščin, v katerih se nahaja ob izbiranju in nakupovanju nepremičnine.

Hipoteza 2:

Skala S12 predstavlja idealno samokongruenco, S11 aktualno samokongruenco in S13 socialno samokongruenco. Obstaja statistično značilna razlika pri  $p < 0,001$  med skalama S12.13 in S11  $F = 60,925$ . Rezultati so prikazani v tabeli 2.

Tabela 2: ANOVA za S13 in S11

S12.13	Vsota sred. kvadratov Squares	Df	Srednji kvadrat	F	P
S11	102,063	4	25,516	<b>60,925</b>	<b>0</b>

Tabela 3: Robust Tests of Equality of Means

S11/S12.13	Statistika	Df1	Df2	P
Welch	65,692	4	13,944	0,000
Brown – Forsythe	77,002	4	28,646	0,000

Obstaja statistično značilna razlika rezultatov med skalama S11 in S12.13

za 1 - sploh se ne strinjam ( $M=1,33$ ;  $SD = 0,577$ ),

za 2 - ne strinjam se ( $M=2,95$ ;  $SD = 0,510$ ),

za 3 - niti se ne strinjam niti se strinjam ( $M=3,83$ ;  $SD = 0,629$ ),

za 4 - strinjam se ( $M=4,25$ ;  $SD = 0,675$ ),

za 5 - povsem se strinjam ( $M=4,63$ ;  $SD = 0,547$ ).

Obstaja statistično značilna razlika pri  $p < 0,001$  med skalama S11 in S12  $F=115,437$ . Rezultati so prikazani v tabeli št. 4.



Tabela 4: ANOVA za S12 in S11

S12	Vsota povpr. kvadratov	Df	Povprečni	F	P
			kvadrat		
S11	164,945	4	41,236	<b>115,437</b>	<b>0</b>

Tabela 5: Robust Tests of Equality of Means

S11/S12	Statistic	Df1	Df2	Sig.
Welch	97,785	4	13,605	0,000
Brown - Forsythe	100,161	4	15,941	0,000

Obstaja statistično značilna razlika rezultatov med skalama S11 in S12

za 1 - sploh se ne strinjam (M=1,60; SD = 0,548),

za 2 - ne strinjam se (M=3,00; SD = 0,816),

za 3 - niti se ne strinjam niti se strinjam (M=3,29; SD = 0,544),

za 4 - strinjam se (M=4,41; SD = 0,710),

za 5 - povsem se strinjam (M=4,04; SD = 0,719).

Obstaja statistično značilna razlika pri  $p < 0,001$  med skalama S11 in S13  $F=5,994$ .

Tabela 6: ANOVA za S11 in S13

S13	Vsota sred. kvadratov	Df	Srednji	F	P
	Squares		kvadrat		
S11	12,152	4	3,038	<b>5,994</b>	<b>0</b>

Tabela 7: Robust Tests of Equality of Means

S11/S13	Statistika	Df1	Df2	P
Welch	5,657	4	73,692	0,000
Brown - Forsythe	4,516	4	95,747	0,000

Obstaja statistično značilna razlika rezultatov med skalama S11 in S13

za 1 - sploh se ne strinjam (M=3,76; SD = 1,128),

za 2 - ne strinjam se (M=3,92; SD = 0,744),

za 3 - niti se ne strinjam niti se strinjam (M=4,05; SD = 0,671),

za 4 - strinjam se (M=4,17; SD = 0,730),

za 5 - povsem se strinjam (M=4,53; SD = 0,0624).

Na podlagi spodnje tabele za ANOVO za S11, S12 in S13 lahko povzamemo, da je izmed treh pojavnosti samokongruence najpomembnejša idealna samokongruenca, saj je njena F statistika največja. F statistika za aktualno samokongruenco znaša 25,364, za idealno samokongruenco znaša 31,169 in za socialno samokongruenco znaša 25,255.

Tabela 8: ANOVA za S11, S12, S13

	Vsota sred. kvadratov	Df	Srednji	F	P
			kvadrat		
S11	47,876	4	11,969	<b>25,364</b>	<b>0</b>
S12	56,685	4	14,171	<b>31,169</b>	<b>0</b>
S13	50,483	4	12,621	<b>25,255</b>	<b>0</b>

Hipoteza H2 je potrjena, ugotovili pa smo, da potencialni kupci pri izbiri oziroma preferenci stanovanjskih nepremičnin med tremi koncepti osebne kongruence dajejo največji pomen idealni samokongruenci, najmanjši pa socialni samokongruenci.

Raziskave so pokazale, da stanovanje / hiša in njene fizične lastnosti lahko vplivajo na povečanje kupčevega samospoštovanja (Ruesch in Kees, 1956; Becker, 1977; Devlin, 1994; Rossi in Weber, 1996; Rohe in Basolo, 1997).

Idealna samokongruenca torej vpliva na stanovanjske preference in izbiro kot posredni učinek potrebe po večjem samospoštovanju. Kupci, katerih idealni osebni imidž se bo skladal z imidžem naseljenega prebivalstva določenega stanovanja/soseske, bodo preferirali določen dom in bili motivirani za nakup taistega stanovanja zaradi potrebe po samospoštovanju.

Socialno-samokongruenca se nanaša na skladnost med kupčevim socialno- osebnim imidžem in imidžem naseljenega prebivalstva. Socialno-osebni imidž je družbeni jaz oz. jaz v družbi na splošno. Socialno-osebni imidž vpliva na obnašanje ljudi preko motiva družbene potrditve, to je, kako naj te družba sprejema, vidi, gre za potrjenost s strani družbenega sloja (Johar in Sirgy, 1991; Sirgy in dr., 1992). Ljudje so motivirani k tistim dejanjem, s katerimi bodo v očeh drugih več vredni oziroma pridobili na vrednosti. Želijo si prejeti potrditev s strani družbe.

Raziskovalci pojasnjujejo, da izbira stanovanja tako kot druga fizična posestva sporoča drugim in samemu sebi pomen (Nasar, 1989; Lindstrom, 1997; Klaufus, 2000). Ljudje so motivirani k zagotovitvi, da njihove stanovanjske izbire ustrezajo normam njihove referenčne družbene skupine (Becker, 1977; Niedenthal in Cantor, 1985; Klaufus, 2000). Obstaja veliko vidikov odločitev pri stanovanjski izbiri, ki se jih lahko interpretira v luči motiviranosti po socialnem odobravanju. Eden od teh vidikov je izbira sosese. Stanovanjski raziskovalci so dokumentirali vzorec migracije iz prebivališč na spodnjih ravneh lestvice vrednotenja prebivališča na prebivališča v bolj izoliranih in manjših skupnostih (npr. Packard, 1959; Strauss, 1959; Becker, 1977).

Tudi druge vidike stanovanjskega izbire se lahko prav tako razlaga v luči socialnega odobravanja. Na primer kakovost šol/ izobraževanja v soseski je pomemben dejavnik pri izbiri stanovanj. Potreba po socialni odobritvi lahko nadalje vpliva na izbiro stanovanj z določanjem pomena, pripisanega lastnostim neke določene sosese. Družbene norme vplivajo na obnašanje v katerikoli družbeni skupini. Takšne norme lahko določajo, katere sosedske lastnosti so zaželene. Želene lastnosti, ki naj jih vsebuje soseska, zato vplivajo na izbiro stanovanj pozitivno, medtem ko neželene lastnosti vplivajo na izbiro stanovanj negativno. Poleg tega, posamezniki primerjajo svoje materialno bogastvo in svoj status z materialnim posedovanjem in statusom svojih sosedov z namenom ocenitve, na kakšni ravni so v primerjavi z drugimi (Fernandez in Kulik, 1981).

Socialna samokongruenca torej vpliva na stanovanjskem področju na preference in izbiro stanovanja preko posrednih učinkov potrebe po socialni odobritvi. To je, kupci, ki bodo dosegli skladnost med imidžem prebivalcev stanovanja in njihovo socialno samopodobo, bodo z večjo verjetnostjo izražali želje po nakupu tega stanovanja in bodo motivirani za nakup le tega, saj bodo na ta način izpolnili svojo potrebo po socialni odobritvi.

Hipoteza 3:

Obstaja statistično značilna razlika pri  $p < 0,001$  med skalama S14.15 in S16.17,  $F=38,709$ .

Obstaja statistično značilna razlika rezultatov med skalama S14.15 in S16.17

za 1 - sploh se ne strinjam ( $M=3,73$ ;  $SD = 0,467$ ),

za 2 - ne strinjam se ( $M=4,01$ ;  $SD = 0,834$ ),

za 3 - niti se ne strinjam niti se strinjam ( $M=4,11$ ;  $SD = 0,679$ ),

za 4 - strinjam se ( $M=4,48$ ;  $SD = 0,545$ ),

za 5 - povsem se strinjam ( $M=4,80$ ;  $SD = 0,433$ ).

Tabela 9: ANOVA za S14.15 in S16.17

	Vsota sred. kvadratov	Df	Srednji kvadrat	F	P
S14.15	60,195	4	15,049	<b>38,709</b>	<b>0,0000</b>
	396,928	1021	0,389		
	457,123	1025			

Tabela 10: Robust Tests of Equality of Means

S14.15	Statistic	Df1	Df2	Sig.
Welch	47,393	4	66,976	0,000
Brown – Forsythe	40,965	4	210,169	0,000

Hipoteza H3 je potrjena: Potencialni kupci pri izbiri oz. preferenci stanovanjskih nepremičnin pri konceptu funkcionalne kongruence dajejo znotraj opazovanih parametrov v okviru treh skupin dejavnikov (fizični, bivalno okolje, socialnoekonomski dejavniki) bistveno večji pomen fizičnim dejavnikom kot dejavnikom bivalnega okolja in socialno-ekonomskim dejavnikom.

Dosedanje raziskave so pokazale pomen funkcionalne in osebne kongruence na preference in izbiro nepremičnin pri nakupovanju le teh. Pokazale so večji vpliv funkcionalne kongruence na preference, vendar ob določenih pogojih tudi obratno, večji vpliv osebne kongruence na preference in nakup nepremičnine. V vsakem primeru pa pomen osebne kongruence ni zanemarljiv, saj je ugotovljeno, da sama samokongruenca vpliva neposredno tudi na funkcionalno kongruenco.

Izbira ali preferenca stanovanja je pozitivno povezana s funkcionalno kongruenco. Torej, večja kot je skladnost med zaznanimi stanovanjskimi uporabniškimi lastnostmi (kot je kvaliteta doma, v smislu s stanovanjskimi prostori, namenjenimi za spanje, dnevno bivanje, prehranjevanje in vzdrževanje, stroški za nakup in vzdrževanje stanovanja) in kupčevimi želenimi lastnostmi stanovanja, večja je verjetnost, da bo kupec želel kupiti in da bo motiviran za nakup tega stanovanja.

Funkcionalno kongruenco so v okviru posamičnih dejavnikov preučevali številni raziskovalci. Grum (2010) in Temeljotov Salaj (2010) sta preučevala vlogo demografskih dejavnikov, vlogo lastnih in vlogo zunanjih dejavnikov pri vplivanju na pričakovanja potencialnih kupcev pri nakupovanju nepremičnin. Oblikovala sta vprašalnik, ki ima za temeljni cilj določiti dejavnike, ki so odločilni pri odločanju o nakupu nepremičnine. Vprašalnik je sestavljen iz treh sklopov. Prvi sklop zajema demografske podatke, drugi sklop je vezan na lastna pričakovanja kupcev, in sicer želje in interesi kupcev glede nepremičnin, tretji sklop pa je vezan na zunanja pričakovanja kupcev, kot sta ekonomsko okolje in zakonske ureditve na področju nepremičnin.

## 5. ZAKLJUČEK

Članek se nanaša na vpliv osebne kongruence in funkcionalne kongruence na preference in nakupne izbire nepremičnine. Funkcionalna kongruenca pomeni, da večja kot je skladnost med zaznanimi uporabniškimi lastnostmi stanovanja (v smislu s stanovanjskimi prostori, namenjenimi za spanje, dnevno bivanje, prehranjevanje in vzdrževanje, stroški za nakup in vzdrževanje stanovanja) in kupčevimi želenimi lastnostmi stanovanja, večja je verjetnost, da bo kupec motiviran za nakup dotičnega stanovanja. Raziskovalci so z empiričnimi raziskavami ugotovili, da poleg same funkcionalne kongruence vpliva na preference in izbiranje nepremičnine tudi osebna kongruenca oziroma samokongruenca. Samokongruenca je definirana kot stopnja skladnosti med imidžem proizvoda in kupčevo osebnostjo. Pri tem gre za simbolični pomen, ki ga ima izdelek. Samokongruenca vpliva na izbor proizvoda v pozitivnem smislu, in sicer, večja kot je skladnost samokongruence z imidžem proizvoda, bolj je kupec nagnjen k nakupu tega izdelka. V raziskavi nas je zanimalo, ali samokongruenca bistveno vpliva na izbor stanovanja oziroma ali sploh vpliva na izbor

stanovanj. V nadalje smo proučevali, ob kakšnih pogojih ima funkcionalna kongruenca večji vpliv na izbor nepremičnine kot samokongruenca ter obratno ter kakšna je medsebojna povezanost osebne in funkcionalne kongruence pri nakupovanju nepremičnine. Še posebej nas je zanimal vpliv kongruence kupcev na preference in nakup nepremičnine v Sloveniji. Ugotovili smo, da potencialni kupci izražajo statistično pomembne razlike med osebno in funkcionalno kongruenco. Poleg tega smo ugotovili, da je izmed treh pojavnih oblik samokongruence (aktualna, idealna in socialna samokongruenca) v Sloveniji najpomembnejša idealna samokongruenca.

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## **Determination of the characteristics of the faults in the settlements with earthquake risk by satellite images: Sındırgı and Surroundings (Balıkesir, Turkey)**

Erdem Gündoğdu

Çanakkale Onsekiz Mart University, Çan Vocational College,  
Department of Mining and Mineral Extraction, Turkey  
E-mail: erdem@comu.edu.tr

Süha Özden

Çanakkale Onsekiz Mart University, Faculty of Engineering,  
Department of Geological Engineering, Turkey  
E-mail: ozden@comu.edu.tr

### **Abstract**

The distances, locations and earthquake potentials of the faults especially located in the earthquake-bearing regions are the subject of debate. Since field observations are difficult to be made in zones where residential areas are concentrated, additional study methods are needed. This is because traces of structural elements such as faults cannot always be seen clearly in the field. In such cases, satellite images can provide preliminary information on the extent and location of the faults. The study area includes Sındırgı and surroundings (39°05'-39°15'N / 28°00'-28°30'E). In this study, the characteristics of the faults which have the potential to create earthquake around Sındırgı were tried to be determined with the help of LANTAD satellite image. On the LANDSAT satellite image, the band combinations suitable for such research are used. In addition, filtering process on satellite images has also been applied perpendicular to the general directions of possible faults in the study area. Also, the earthquakes that have occurred in the recent history of the region have been examined and attempts have been made to determine the faults where these earthquakes have occurred. The magnitudes (M) of these earthquakes are investigated from the surface to the depth and the earthquake generating potentials of the existing faults are examined. With seismological studies, all the earthquakes from 1900 to the present has been scanned. As a result, the presence, lengths, locations and potentials of earthquakes in a settlement site (Sındırgı, Balıkesir) have been tried to be determined through multiple methods. Thus, possible earthquake risks of existing residential areas and settlements in the study area were examined. This study was supported by project number ÇOMÜ-BAP- FBA-2016-809.

**Keywords:** Settlement, Earthquake Risk, Fault, Satellite Images, Sındırgı.



## 1. INTRODUCTION

Increasing urbanization and construction, especially in the last hundred years, has led to many new settlement areas being built globally along with rapidly growing settlement areas. A significant portion of these settlement areas are located in or near tectonically active regions which leads to an earthquake risk for these structures. Turkey and surroundings are located in the most active portion of one of the world's most active regions of the Alpine-Himalayan Belt and has experienced large earthquakes throughout history (Sayıl et al., 2005). For this reason, as in the past a large section of Turkey is currently under threat from earthquakes. Nearly 92% of the spatial area of Turkey and 95% of the population of Turkey lives in earthquake zones (Figure 1). According to the Turkish Active Fault Map published in 2012, there are a total of 326 active faults, when considered with subcomponents, 485 faults that may produce earthquakes (Figure 2a). According to 2010 data, nearly 71% of the population of Turkey lives in 1st and 2nd degree earthquake zones. Only 1.4% of the country's population lives in regions with lowest risk of 5th degree earthquakes (Table 1). As a result, the majority of the country's population lives in regions with earthquake risk.

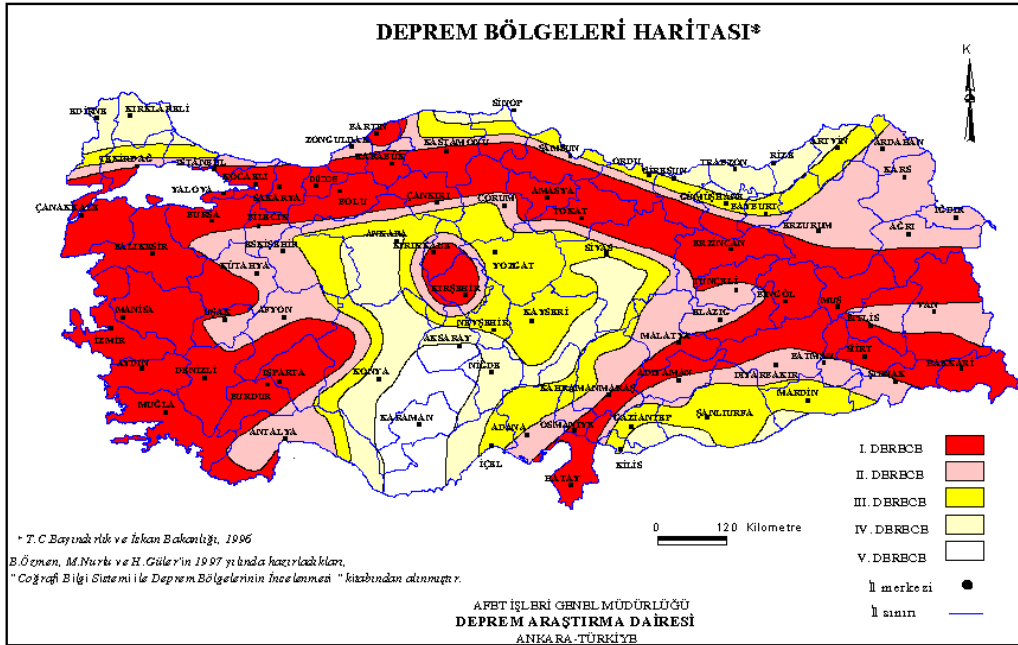
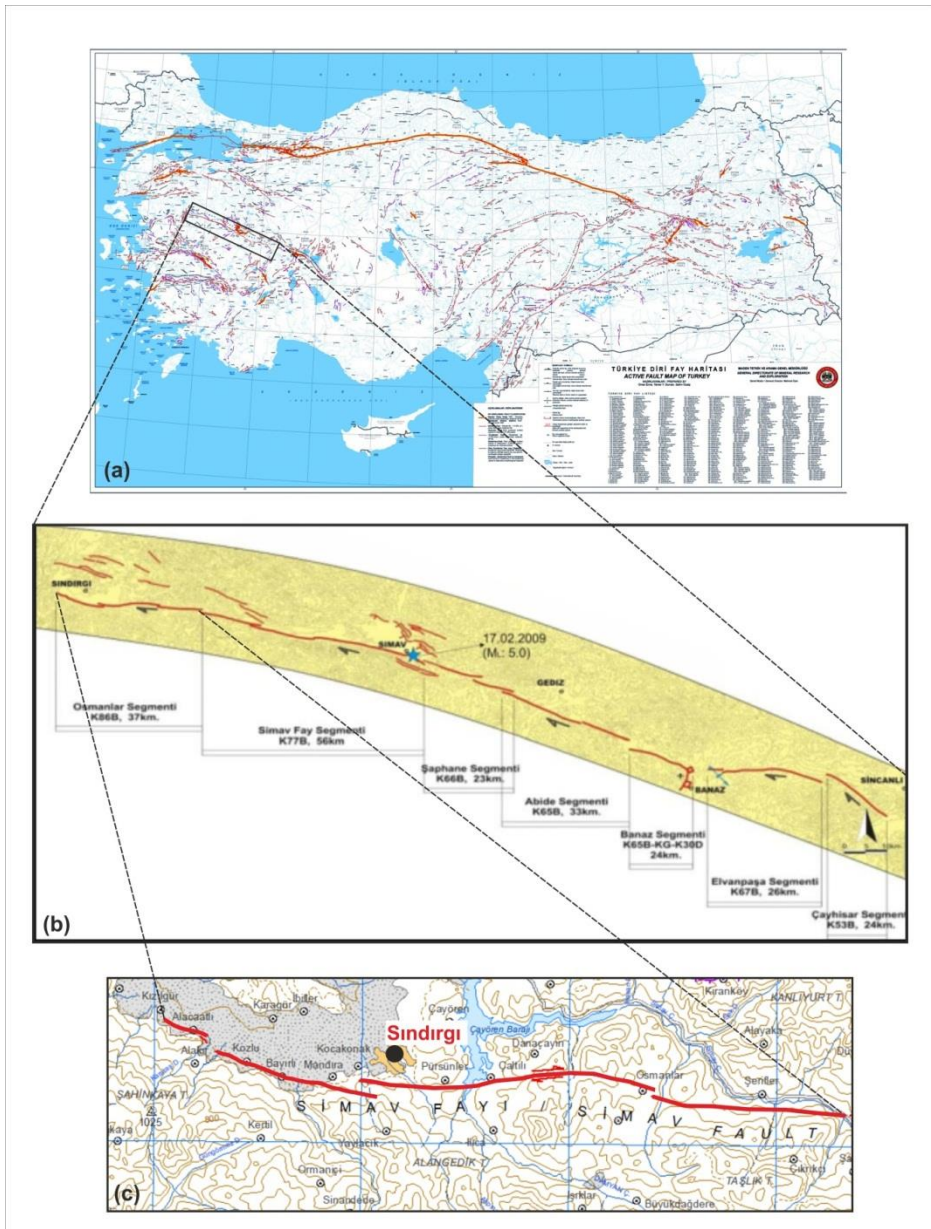


Figure 1. Turkish Earthquake Zone map (General Directorate of Disaster Affairs, 1996).



**Figure 2.** (a) Updated Turkish Active Fault Map and location of the study area (General Directorate of Mineral Research and Exploration, 2012), (b) Location of the study area within the Sındırgı-Sincanlı Fault zone (Doğan and Emre, 2006; Emre et al., 2011a; Emre et al., 2011b; Emre et al., 2011c; Emre et al., 2011d). (c) Study area-Osmanlar segment (Emre et al., 2011a)

**Table 1.** Population density in earthquake zones in Turkey, according to 2010 data (TÜİK, 2012).

Earthquake Zone	Population	Population rate
1st degree	32.314.941	% 43,8
2st degree	20.566.708	% 27,9
3st degree	9.420.358	% 12,8
4st degree	10.411.659	% 14,1
5st degree	1.009.322	% 1,4
<b>Total</b>	<b>73.722.988</b>	<b>% 100</b>

Active tectonic features in Western Anatolia lead the list of significant active structures in Turkey. There are many active tectonic features in Western Anatolia, with the Sındırgı-Sincanlı Fault Zone (Figure 2b) having great importance. Assessed as a structural limit between the Aegean extensional tectonic regime and the northwest Anatolian transitional tectonic regime, the Sındırgı-Sincanlı Fault

Zone is an active fault system nearly 22 km long with right lateral strike slip motion and WNW-ESE general strike between Sındırgı (Balıkesir)–Sincanlı (Afyon) (Doğan and Emre, 2006; Emre and Duman, 2011; Emre et al., 2011a; Emre et al., 2011b; Emre et al., 2011c; Emre et al., 2011d). The Sındırgı-Sincanlı Fault Zone comprises seven segments between Soma and Afyon, with these segments called Osmanlar, Simav, Şaphane, Abide, Banaz, Elvanpaşa and Çayhisar segments, from west to east respectively (Doğan and Emre, 2006). The lengths and general strikes of these segments are shown in Table 2.

This study deals with the Osmanlar Segment of the Sındırgı-Sincanlı Fault Zone with N86°W strike and 37 km length (Doğan and Emre, 2006) (Figure 2c). The LANDSAT satellite images of the study area and surroundings were investigated, and a variety of band combinations were used on the satellite images in an attempt to determine structural elements. The structural elements determined on satellite images were compared with active fault maps and field observations. Thus approaches were found related to how well the lineations determined on the satellite images reflect the active structural elements (like faults).

**Table 2.** Lengths and general strikes of segments forming the Sındırgı-Sincanlı Fault Zone (compiled from Doğan and Emre, 2006; Emre et al., 2011a; Emre et al., 2011b; Emre et al., 2011c; Emre et al., 2011d).

General direction	Length	Segment
K86°B	37 km	Osmanlar Segment
K77°B	56 km	Simav Segment
K66°B	23km	Şaphane Segment
K65°B	33 km	Abide Segment
K65°B-KG-K30°D	24 km	Banaz Segment
K67°B	26 km	Elvanpaşa Segment
K53°B	19 km	Çayhisar Segment

## 2. SEISMICITY OF SINDIRGI SURROUNDING AREA (BALIKESİR, TURKEY)

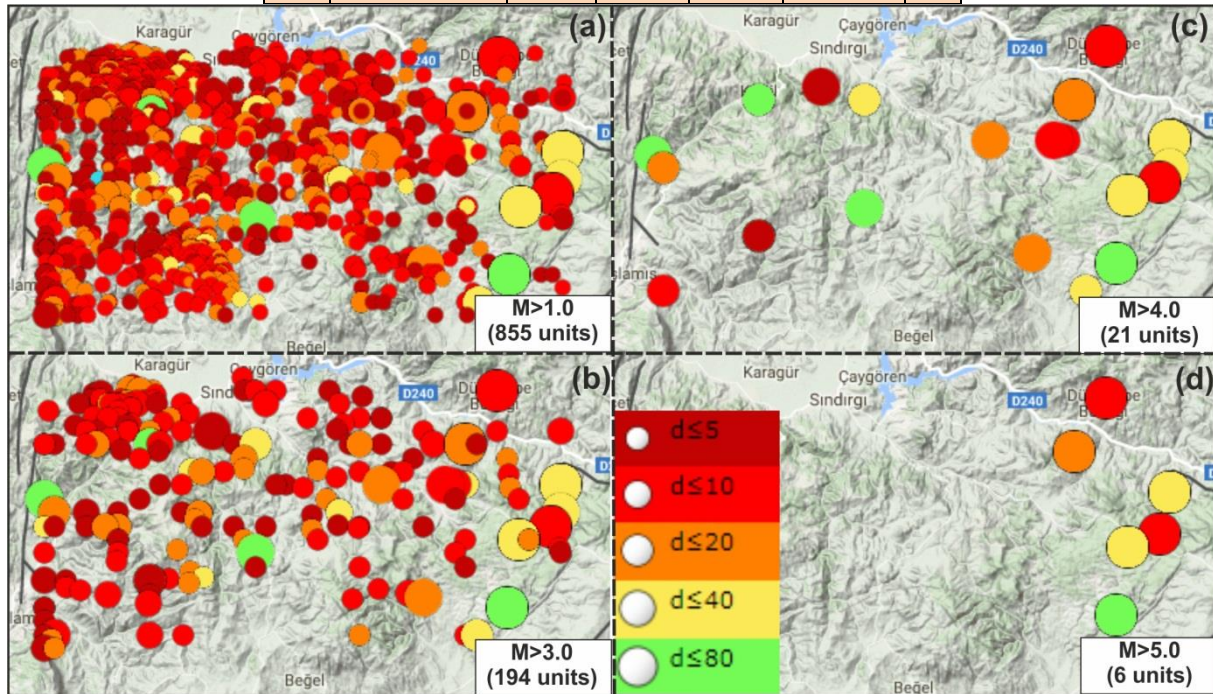
The Osmanlar Segment and close surroundings comprising the study area is a sub-segment of the WNW-ESE striking Sındırgı-Sincanlı Fault Zone which extends between Balıkesir and Afyon (NW Turkey) with nearly 220 km length. The Osmanlar Segment with N86°W strike and nearly 37 km length, has current earthquake risk similar to the past. In the last century in the study area (since 1900 to the present), there have been 6 M>5.0 earthquakes, 21 M>4.0 earthquakes and 194 M>3.0 earthquakes. The location information and other parameters (time, depth, magnitude, coordinates) for these earthquakes are given in Figure 3 and Table 3.

**Table 3.** Time, coordinate, magnitude and depth parameters for M>4.0 earthquakes occurring in the study area from 1900 to the present day (Colored earthquakes are M>5.0). Earthquake magnitude (M) shows the largest of a variety of earthquake magnitudes (xM-MD-ML-Mw-Ms-Mb). Lat: Latitude, Lon: Longitude, M: Magnitude (compiled from Boğaziçi University, KOERI-RETMC Earthquake Catalog Search System)

No	Date	Hour	Lat.	Lon.	Depth	M
1	10.06.2011	22:47	39.09	28.36	13.9 km	4.6
2	06.06.2002	05:09	39.06	28.01	8.0 km	4.3
3	31.03.1993	18:20	39.15	28.01	13.0 km	4.3
4	23.04.1988	17:54	39.10	28.10	33.0 km	4.0
5	03.09.1976	20:53	39.21	28.16	4.0 km	4.5
6	08.04.1973	09:52	39.17	28.39	7.0 km	4.4
7	02.03.1973	19:30	39.20	28.10	55.0 km	4.2
8	23.03.1970	07:56	39.20	28.20	26.0 km	4.2



9	13.10.1969	03:24	39.17	28.38	9.0 km	4.5
10	07.10.1969	05:09	39.20	28.40	13.0 km	5.2
11	14.05.1969	23:57	39.15	28.49	36.0 km	4.9
12	28.03.1969	10:02	39.13	28.45	37.0 km	5.2
13	27.03.1969	18:07	39.12	28.20	51.0 km	4.8
14	25.03.1969	17:51	39.16	28.00	44.0 km	4.5
15	25.03.1969	16:13	39.08	28.44	42.0 km	5.0
16	25.03.1969	14:18	39.17	28.49	34.0 km	5.1
17	25.03.1969	13:21	39.06	28.41	28.0 km	4.3
18	23.03.1969	21:08	39.14	28.48	9.0 km	5.9
19	23.03.1969	00:15	39.17	28.32	12.0 km	4.5
20	26.11.1968	16:56	39.10	28.10	5.0 km	4.0
21	22.07.1953	15:09	39.24	28.43	10.0 km	5.4



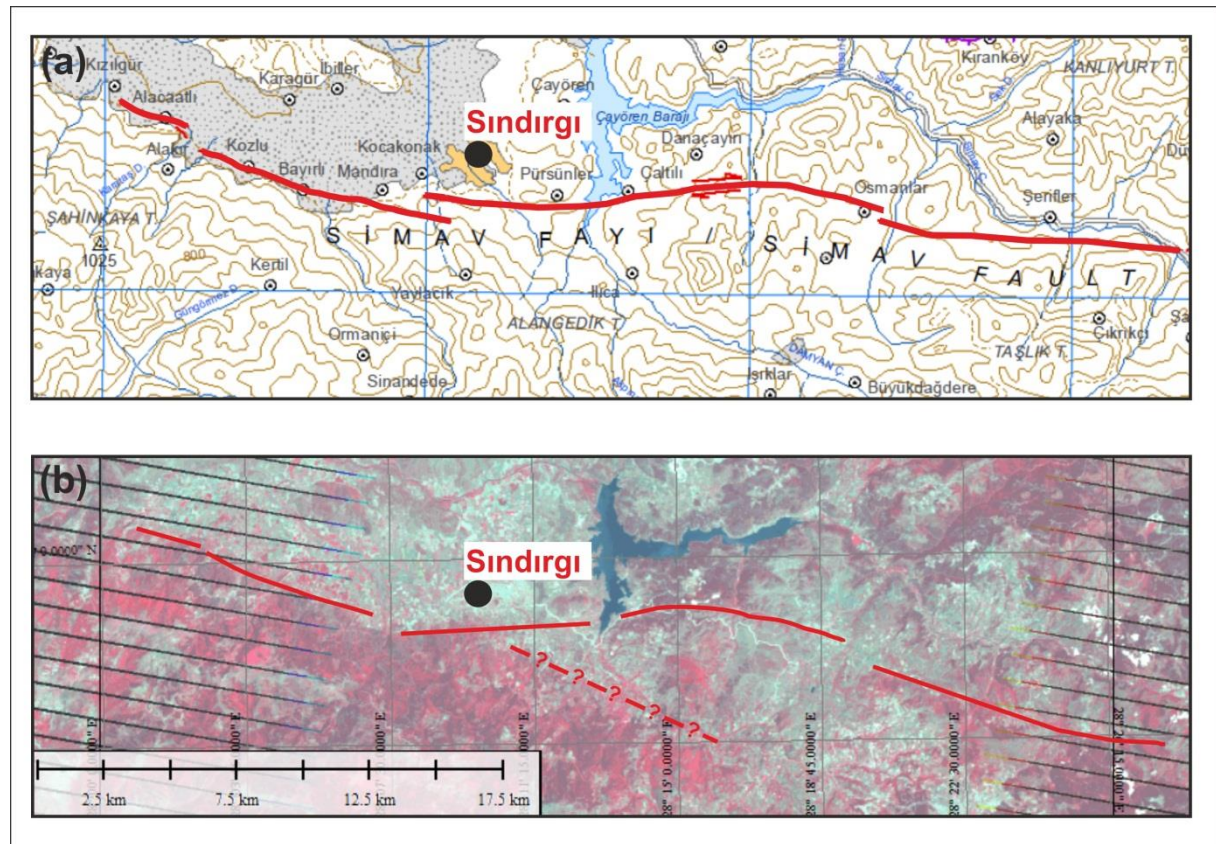
**Figure 3.** Distribution of earthquakes in the study area from 1900 to the present (a) Distribution of 855  $M>1.0$  earthquakes, (b) Distribution of 194  $M>3.0$  earthquakes, (c) Distribution of 21  $M>4.0$  earthquakes, and (d) Distribution of 6  $M>5.0$  earthquakes (Size and color of the earthquake points indicate the focal depth of the earthquakes. (as shown in the legend in “d”) (compiled from Boğaziçi University, KOERI-RETMC Earthquake Catalog Search System)

### 3. DETERMINATION OF STRUCTURAL ELEMENTS IN THE STUDY AREA WITH SATELLITE IMAGES

The geological, tectonic and geomorphologic characteristics of an area are generally determined as a result of field studies. To determine and map large scale structures, especially, it may be very beneficial to assess data obtained from field studies together with remote sensing studies. Remote sensing studies may be completed simultaneously with field work, and ensure easier definition of large-scale structural elements. These studies are generally based on the principle of processing satellite images with a variety of methods. To better define active fault belts in recent years, in addition to studies in the field, detailed observations of satellite images are made in the computer environment (Adıyaman et al., 2001) and data are assessed together.

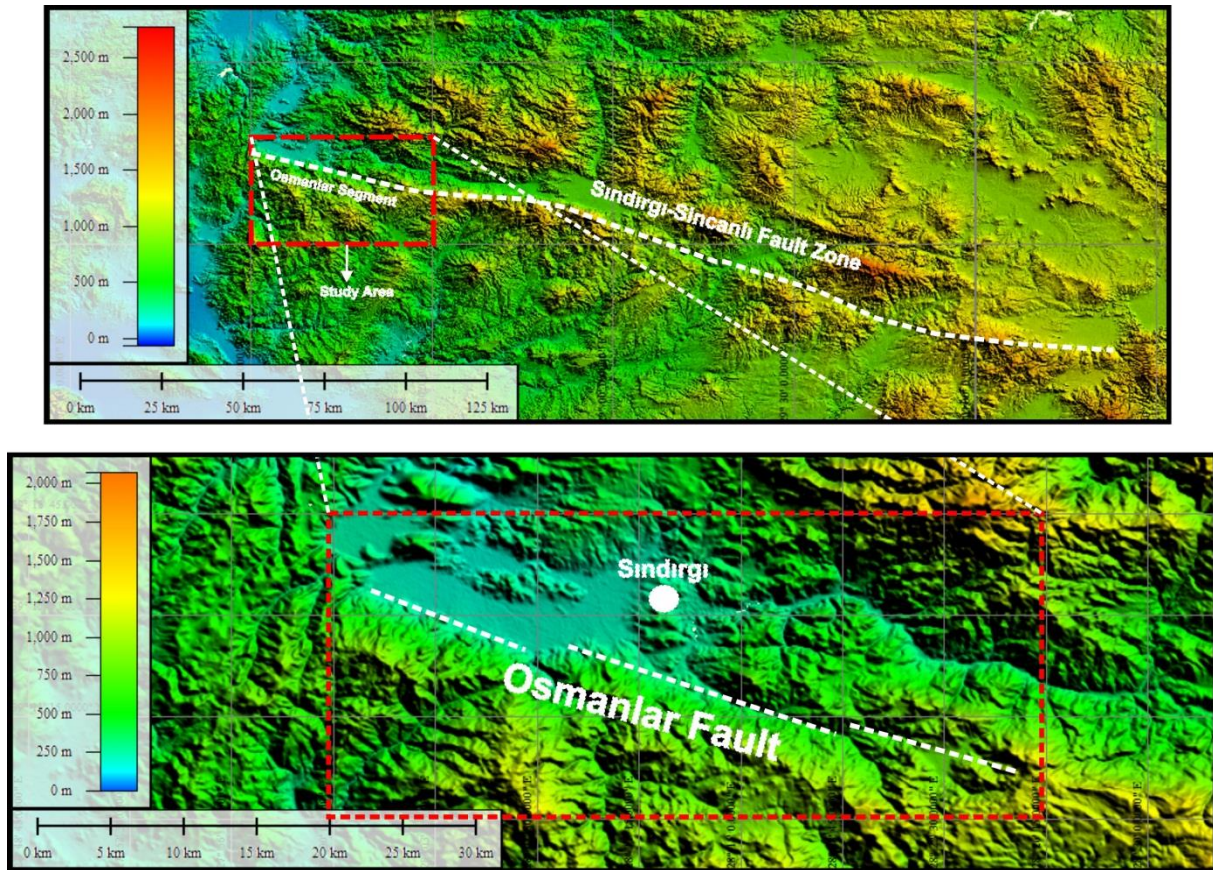
Though lineation analysis with remote sensing methods is a commonly-used research method in geological research (Süzen and Toprak, 1998; Över et al., 2004), lineations produced by this analysis only represent broken lines (Karaca et al., 2003). Structural lineations formed by linear features like valleys and ridges contain important elements to define nature and topography (O'Leary et al. 1976). As a result, lineations may be equivalent to tectonic structures like folds and faults (Morelli and Piana 2006; Oliveira et al., 2012). For this reason, lineations obtained from satellite images must be evaluated together with data obtained from field studies.

Within the auspices of this study, a variety of band combinations were used for LANDSAT satellite images of the study area for the first time. Of these band combinations, the 7, 4 and 1 bands which produced the best results were used. Later, an attempt was made to determine linear structures on images processed with this band combination (Figure 4b). In addition, these linearisations have been studied in 3D with SRTM (Shuttle Radar Topography Mission) data (Figure 5).



**Figure 4.** Osmanlar Fault. (a) The Osmanlar Fault on Turkey Active Fault Map (Emre et al., 2011a) (b) Osmanlar Fault on LANDSAT image.





**Figure 5.** SRTM data, 3D elevation model created in the Golbal Mapper program (a) the Sındırgı-Sincanlı Fault Zone and surroundings (b) Osmanlar Segment (Osmanlar Fault) and surroundings.

#### 4. CONCLUSION

A segment of one of Turkey's and Western Anatolia's most important structures of the Sındırgı-Sincanlı Fault Zone, the Osmanlar Fault, located near Sındırgı (Balıkesir) was investigated with LANDSAT images. Using a variety of band combinations on these satellite images, an attempt was made to determine linear structures and active tectonic elements. Global Mapper software was used for this process. Within field studies active faults and possible faults were marked on 1/100,000 scale topographic maps with the aid of the Updated Turkish Active Fault Map. These faults mapped in the field and the lineations obtained from LANDSAT images were superimposed to create a single map. It was concluded that the Osmanlar Segment near Sındırgı (Balıkesir) was clearly observed on the 3D elevation model and LANDSAT satellite images.

As a result, the presence, lengths, locations and potentials of earthquakes in a settlement site (Sındırgı, Balıkesir) have been tried to be determined through multiple methods.

#### 5. ACKNOWLEDGEMENTS

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## **Ten years of burden economic crisis situation – lessons learned from an occupational health perspective**

Bojana Avguštin Avčin  
Brigita Novak Šarotar  
University Psychiatric Clinic Ljubljana, Slovenia

Alenka Temeljotov Salaj  
NTNU Norwegian University of Science and Technology, Norway  
E.mail: alenka.temeljotov-salaj@ntnu.no

### **Abstract**

The article analyses the influence of the economic crisis on the occupational health. Research on workplace health promotion, job stress, high performance workplaces, strategic human resources management and leadership styles congregate around the importance of supporting employees to be effective in their jobs in ways that promote their health. From the systematic review, it is evident that job insecurity is associated with many diseases connected with depression, heart disease, suiciding situation. During the hard, economic 'factor of production' had number of effects on the workplace, such as: job insecurity, work intensity, temporary uninsured work, violence and harassment, absenteeism and presentism due to occupational stress. Economic downturn caused a prolonged increase in suicide mortality. The present research focuses on the literature review analysis of specific elements of the work environment and behavioural habits of employees at their jobs with the aim to discover the characteristics of the workplace that have the most effect on the individual.

**Keywords:** Economic crisis, Occupational health, Workplace



## 1. INTRODUCTION

As a result of globalisation, deregulation of labour markets and increasing competition as well as global financial crisis, many European countries suffered from significant labour market changes. The effects are higher unemployment rates in many countries and labour market conditions which are related to a higher fear of losing one's job, a higher experience of stress, and lower job satisfaction. They create the sense of job insecurity (JI) and undermine the confidence in the company and they negatively influence attitudes towards the job and the organisation (Sverke et al., 2002), reduce productivity and increase economic costs for the firms, employees and society.

Employees tend to reflect the wellness of their workplace environment through their well-being (Ljungblad et al., 2014). Job satisfaction, as an important factor for positive well-being (Temeljotov et al., 2017; Maamari & Smith, 2012; Herzberg et al. 2011), is considered to result from a set of indicators, characterizing the context in which work is performed, among them physical working conditions and job security. Poor management of the occupational health conditions can lead to work-related illnesses (Arnetz et al. 2011), so it is necessary to make interventions targeting both the traditional psychosocial environment and the organizational efficiency to achieve decreasing employee stress and to enhance mental well-being. A meta-analysis on 485 studies found job satisfaction strongly associated with mental health and moderately with physical health (Faragher et al., 2005). Some research is focused on the importance of supporting employees to be effective in their jobs in ways that promote their health (Stone et al., 2017; Harrison and Dawson, 2016; Lippel et al, 2011; Vicher, 2008; Shain & Kramer, 2004). The others look how mental illness influence the workers' productivity (Bubonya et al, 2017; Zhang et al, 2017; Reichert and Tauchmann, 2017; Uribe et al, 2017). Bubonya et al. (2017) made an analysis about mental health and productivity at work and pointed out that an absence is approximately five percent higher among workers with poor mental health (absenteeism and presentism). According to Bubonya et al. (2017) workers' absenteeism is more sensitive to increased job control if they have a mental health issue, while women with mental issues are also more responsive to job security.

Two acclaimed theories of workplace stress identify the following stressors as key factors in the onset of stress-related illness: the Demand-Control-Support model predicts that high levels of job demands, low levels of job control, and low levels of social support are strongly associated with negative health outcomes (VanDoef & Maes, 2000). The second popular model, the Effort-Reward Imbalance model predicts that high levels of extrinsic effort, intrinsic effort and low levels of reward, will significantly predict negative health outcomes. These two models are found to be good predictors of physical and psychological health outcomes including heart disease, mortality, and depression in many occupational groups (Mark & Smith, 2012; Kinman & Court, 2010). From the systematic review and meta-analysis is evident that job insecurity is associated with incidental coronary heart disease (Virtanen et al, 2013), and that depression could contribute to the job insecurity coronary heart disease. Factors such as high levels of workload and job demands, low peer support and poor working relationships in populations would certainly suggest that these populations may be at high risk from stress-related illnesses.

## 2. JOB INSECURITY – THEORETICAL BACKGROUND

JI relates to outcomes via four overarching mediating mechanisms: stress-related mechanisms, social exchange-related mechanisms, job preservation motivation, and proactive coping (Shoss, 2017).

### How does job insecurity affects mental health

JI is seen as an especially harmful stressor that affects well-being at the workplace, as this stressor includes uncertainty and uncontrollability. Therefore, it is difficult for the individual to react adequately to the stressor with the appropriate coping strategy, which in turn leads to feelings of anxiety and lower well-being (Sverke et al, 2002). One theory that explains the negative outcomes of

JI is the psychological contract theory (Rousseau, 1995). According to this theory, the employer and the employee perceive a mutual obligation to each other (e.g., a psychological contract). Within this contract, the loyalty of the employee is exchanged with the security of the employer. If the employer can no longer guarantee security, employees will perceive this as a violation of the psychological contract, which has consequences for the well-being and commitment of employees (De Witte, 2005; Schreurs et al, 2010).

Anxiety about JI complicates existing depression and acts as a chronic stressor with cumulative effects over time (Wilkinson and Marmot, 2003). Catalano et al, using a labour market model, hypothesised that tolerance for behavioural and physical deviance may be reduced in times of an economic crisis following anxiety of job insecurity (Catalano et al, 2009). Among a series of coping mechanisms for the work related stressors are alcohol consumption and substance misuse and even suicide (Dee TS, 2001). In an economic crisis, the impact on mortality and morbidity is exacerbated where people have easy access to unhealthy coping mechanisms (Ng et al, 2013).

The notion of providing workers with employment security while simultaneously allowing for greater flexibility in the labour market in order to foster organizational competitiveness has been termed flexicurity (Probst and Jiang, 2017). Despite the tendency of flexicurity policies within EU, which seek to foster organizational competitiveness while ensuring employment security for workers, Probst and Jiang (2017) concluded in their research that countries with higher flexibility have lower employment protection. On the survey data from 13,738 individuals in 19 EU countries, with differing levels of employment security protections and flexible work arrangements, they searched for reaction on the perception of job risk in terms of affective and stress reactions. Their analyses indicated that employee perceptions of job insecurity were significantly related to greater affective insecurity and higher levels of job stress.

In a study of Yuan and Wang (2016), they examined the relationship between general insecurity and general mental health, in which optimism acted as a mediator and attribution style acted as a moderator. It is found that general insecurity can be harmful to general mental health through damaging optimism, but using external attribution strategy can help to reduce the consuming effect of insecurity and thus maintains optimism and mental health.

### **3. JOB INSECURITY AND MENTAL HEALTH: A LITERATURE REVIEW**

#### **Slovenia's data**

After the economic crisis hit the global capitalist economy in 2008 and 2009, the Slovene economy experienced a decrease of exports by 16.1% in 2009 and a devastating decline in economic growth. The debt crisis that followed was a logical outcome of the recession and the crisis rooted in the corporate sector. Unemployment rates were 4.4% in 2008 (year of the crisis) and rose to 7.2% (2010) and 8.8% (2012), leading to higher unemployment rates than the OECD average (OECD, 2015). In our study in 2009, altogether 1592 Slovenian employees completed an internet based self-reported questionnaire. Data about perceived impact of the economic crisis, several socio-demographic, socioeconomic and health parameters were collected. Depressive and anxiety scores were significantly increased among 590 (46.6%) employees being affected by the economic crisis. The level of depressive symptoms was significantly associated with perceived impact by the crisis, recent sick leaves, reported injuries sustained at work, benzodiazepine and analgesic use, the lack of emotional support, and trust in crisis telephone lines. The level of anxiety symptoms yielded the robust association with the level of depression symptoms, reported injuries sustained on the way to work and education (Avgustin Avcin et al, 2011). This creates a new pathology - health problems are connected with the reality of keeping and getting the jobs; health indicators show that the psychological problems are growing, consequences of stress are stronger, and absenteeism and presentism of employees are bigger.

In another recent study (Jimenes et al 2017), the samples of 251 Slovene and 219 Austrian workers were analysed. The data indicated that JI is related to higher stress and intention to quit as well as to lower resources/recovery at the workplace. Stress is an important mediator in the relationship between resources/ recovery and job satisfaction as well as intention to quit. These relationships were found in both samples.

In Slovenia, Margan & Dodič (2015) conducted a research with the aim to establish how indicators of worker's health status influences the employer's decision-making on which workers to retain or dismiss during personnel restructuring in the enterprise. The results show that the observed indicators of workers' health, long-time sick leave (more than 30 days) and disability category exert had the greater risk for dismissal.

#### **4. EU data**

In a study in 16 EU countries about the influence of JI on health, JI was associated with an increased risk of poor health in most of the countries included in the analysis. The association between JI and health did not differ significantly by age, sex, education, and marital status (Laszlo et al, 2009). A high proportion of the working European population aged 45 –70 years perceive their jobs as insecure; the percentage of individuals within the sample of their countries reporting to have an insecure job ranged from 14.2% in Spain to 41.7% in Poland.

The negative impact of the financial crisis on Spanish employees' perceived level of work flexibility, autonomy, stress and monotony is shown on work-balance (Gregory et al, 2013). In terms of human experience, Grau reported 150,000 families affected by the misery of the economic crisis: the pain of being fired, the financial anxiety at the end of the month, or the misery of losing a home (the period from 2008-2011). It is seen that Spanish employees reported very high levels of stress and monotony, up to half per cent (49.9) of the Spanish working in 2010. At that time, women reported higher levels of stress (51.6 per cent) than men (48.6 per cent).

The financial crisis in Greece had number of effects on the workplace (Boustras, 2015), such as: job insecurity and work intensity, increase in temporary uninsured work, violence and harassment, and absenteeism and presentism due to occupational stress. Using Longitudinal Labor Market Study data set, Dyrakis (2015) showed that self-reported health and mental health were negatively affected by unemployment during the 2008 -2013 period of strong financial downturn. The researchers also stated that women's health and mental health were affected more negatively by unemployment due to firm closure than men's both before and during the financial crisis.

Reichert and Tauchmann (2017) prepared an analysis, based on data from the German Socioeconomic Panel (a large longitudinal household survey), searching for the link between workforce reduction, subjective job insecurity and mental health. They found that staff reductions affected the psychological health of employees and their subjective job insecurity. In quantitative terms, it showed that individuals who experienced company-level job cuts were about 10 percentage points more likely to be concerned about their jobs. They also found that staff reductions have virtually no effect on mental health for individuals who regard finding a new job as fairly easy, while those who are pessimistic about finding a new job are most adversely affected. It shows that fear of a job loss is likely to adversely affect mental health and life satisfaction.

A German study published in 2017 (Reichert and Tauchmann, 2017) has shown that company-level workforce reduction exerted detrimental effects on the mental health of employees who remain working in the respective firm. One plausible interpretation of this finding is that staff reductions make employees worried about their jobs and these worries negatively affect mental health. A qualitatively equivalent effect on general life satisfaction has been shown. In line with this argument a positive and statistically significant relationship between workforce reductions and subjective job insecurity has been shown.

An Italian study by Fiory et al (2016) revealed the results that employment insecurity is associated with poorer mental health and that the risks was higher in 2013 than in 2015. The study has concentrated on the relationship between job insecurity and mental health. The sample consisted of 26,972 healthy active individuals in 2005 and 20,432 in 2013, among the young adult population in Italy. The study showed that within the youth labour force, permanent employees have better psychological health than individuals in temporary or non-standard working arrangements, or in unemployment spells. They also stated that the mental health deterioration of unemployed people was especially acute among Italians in 2013, as the economic downturn had last about five years, and many of them have used their personal and family savings. At the same time, employers have more choice, thus, individuals in poor health were forced to accept a less secure, poorly paid job.

In a study, published in 2015 the analyses revealed that both perceived job insecurity and unemployment constitute significant risks of increased depressive symptoms in prospective observational studies. By comparing both stressors, job insecurity can pose a comparable (and even modestly increased) risk of subsequent depressive symptoms (Kim and von dem Knesebeck 2015).

## 5. CONCLUSIONS

Job insecurity has become an increasing problem since the global economic crisis and as labour market has become more flexible. It is well established that job insecurity, like unemployment, has causal detrimental effects on mental and physical health. Workers' health is not just a matter for employees and employers, but also for public policy. Governments should count the health cost of restrictive policies that generate unemployment and insecurity, while promoting employability through skills training. Policy should also encourage forms of employee participation and social support in workplaces (Green, 2015).

Based on the literature review, we suggest that job insecurity is relevant source of mental health problems for a particularly vulnerable group of the population, thus the special protection should be implemented through different policies to prevent psychological health problems among vulnerable employees.

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## **Critical factors associated with road projects resilience to the economic environment – cases from Norway and Slovenia**

Alenka Temeljotov Salaj  
Norwegian University of Science and Technology, Norway  
E-mail: alenka.temeljotov-salaj@ntnu.no

Aleš Hojs  
DRI Investment Management, Slovenia

Peter Verlič  
Institute of Traffic and Transport Ljubljana, Slovenia

### **Abstract**

Norway and Slovenia have different traditions in delivering transport infrastructure projects by Public Private Partnerships (PPP). The paper presents an analysis of three finalised, both public and private road projects, via a framework that conceptualises the transport infrastructure as a system characterised by key typologies: implementation and transport mode context, business model, governance and funding and financing scheme, and one that produces specific outcomes. Conclusions are drawn on the critical factors associated with the projects' respective successes and/or failures, as well as their resilience to the unfavourable economic environment.

**Keywords:** PPP, Success factors, Failure factors, Norway, Slovenia.

## 1. Introduction

The planning, designing, financing and construction of transport infrastructure were traditionally the responsibility of the Norwegian State. The infrastructure policy is published in the Norwegian National Transport Plan with the duration of 10 years and a revision on every fourth year. It outlines the Government plans of prioritizing resources. The national agencies Norwegian Air Traffic Authority (Avinor AS), Norwegian Coastal Administration (Kystverket), Norwegian National Rail Administration (Jernbaneverket) and Norwegian Public Roads Administration (Statens vegvesen) are responsible for air, sea, rail and road transport (The Norwegian National Transport Plan, 2013). Nevertheless, under the popularity of PPP projects in Europe, the governmental decision was taken in Norway to start with some projects have been supported on a governmental level. At present, three infrastructure PPP projects have been conducted, all in their operation phase: State road E39 Klett – Bårdshaug, E39 Lyngdal – Flekkefjord and E18 Grimstad – Kristiansand. The first three PPP transport projects were initiated in 2000 and included in the national Transport program (NTP) 2002-2011 (Bjorberg et al. 2014; Odeck 2014). The outcomes were largely positive, although significant cost savings were not detected (Eriksen et al. 2007, *Solheim-Kile at al. 2016*). The parliament asked the government to establish a strategy to expand the use of PPP projects in 2013.

The government released a report (Storting - white paper) proposing three new projects to be financed by PPPs, with intention of extending the PPP initiative, including railway projects (Meld. St. 25 2014-2015). This report gives a general framework for how state PPPs should be conducted, together with guidance on the use of private finance, project scope, etc. The report also contains information on a new state owned infrastructure company planned to be operational by January 2016. The Minister of Transport and Communications stated on the 28<sup>th</sup> of November 2013 that the Government should establish a special company for developing projects within the transport sector with a start capital of 100 Billion NOK and the aim of decreasing project time and increasing the use of PPP financing schemes (*Solheim-Kile at al. 2016*).

The political parties in Norway do not share the same opinions regarding the use of PPP (*Solheim-Kile at al. 2016*). The sitting Government has shown effort to initiate more PPP projects. Meanwhile, the Labour Party (Arbeiderpartiet) claims that the use of PPP projects is “tricking” the voters into believing that the infrastructure will be built both faster and be less expensive (Krekling, Bulai, & Bærug 2014; *Solheim-Kile at al. 2016*). Norway was one of the countries that were least affected by the financial crisis. The previous governments have criticized the use of PPP schemes because Norway has available capital to finance these projects. The change of government seems to be the reason for increased government funding. An infrastructure fund has been established to ensure predictable financing of the infrastructure. Its value will be approximately 70 billion NOK/8 billion EUR in 2015 (Ministry of Finance, 2015). However, in a recent report to the parliament, some changes are suggested for a new PPP model in comparison with the previous three PPP projects. These changes are mainly focused on lowering the cost of private finance by using a de-escalating model, instead of an annuity based payment profile (Meld. St. 25, 2014-2015). This means that the early payment of most of the project’s value to the PPP contractor will reduce the total cost of private finance.

In Slovenia, a remarkable progress had been made in the field of road infrastructure projects in Slovenia from 1994, which boasts one of the most dense highway network related to its area amongst the central European countries. This was mainly supported by the National Highway Programme (Nacionalni program izgradnje avtocest, NPJA 1994), one of the country’s biggest investment programmes at the time. The financing of such infrastructure projects were made by ‘budget money’ as the governmental finance of public projects with a credit guaranteed by the state. The majority of the works of the ‘National Highway Program’ were carried out by a major Slovenian construction company, which built a “cross” of more than 600 km of highways in almost 17 years. The major problem was that the resulting cost was more than 200% of the originally planned budget estimation for the program. After the completion of the National Highway Program, many debates started in the parliament on the investments costs for highways in Slovenia. This created the need to make future plans for identifying best ways in financing and management of infrastructure projects such as roads.

Within these plans, the adaptation and implementation of a PPP model was seen as one of the ways forward for infrastructure projects. One of the main reasons was the best value for money when the



private sector manages the risks of financing, design, build and delivery (operate and maintain) of the service facility, while in general, there is no payment until the facility is delivered and maintained at agreed service levels and standards (Hojs and Temeljotov, 2013). Slovenia has passed specific legislation related to PPPs and public procurement. The legislative framework is based on the Public-Private Partnership Act (Ur.l.RS, 127/2006) and the Public Utilities Act, while the public procurement aspects are regulated by the Public Procurement Act (Ur.l.RS, 128/2006, 16/2008, 19/2010) and, in relation to review procedures, the Act on the Auditing of Public Procurement (Ur.l.RS, 78/99).

The only road concession contract started in 2004, when a state company DARS (Company for highways in Republic of Slovenia) became responsible for building and operating national highways for at a minimum of 20 years. This change occurred just few months before Slovenia became an EU Member State and this was seen as a right move for the Slovenian State to open doors to an 'open market'. Other than this, according to the PPP Report (Ministry of Finance 2010), there are no PPP road projects in Slovenia. There are three main reasons for this (Hojs et al. 2012). The road transport and related transport connections were very much underdeveloped in Slovenia during the time of independence. Almost all of the national projects were financed by the State, and part of the finance was covered/collected through the price of oil. Any private initiative was, therefore, unwanted due to the fact that the "national interest" was very strong. Therefore, as mentioned in the above, a State policy made a decision to build road infrastructure projects in Slovenia with state budget and credit money. The Slovenian construction companies were also not keen on getting involved in any concessions or PPP projects. The second very common reason, regarding PPP investments in roads, was the expected low traffic volumes and the resulting pressure for tolls. Tolls should be high enough to be economically viable and on the other hand, at a price to be socially acceptable. However, looking back and analysing road traffic statistics, the second reason for not adopting PPPs could not be justified. This is especially evident on the 5<sup>th</sup> corridor (Barcelona-Kiev) in the Slovenian National Highway Programme as the traffic volumes were much higher than expected and toll prices were acceptable for the general public. The last reason was limited expertise of the road public administration in executing such complex and innovative projects. This was evident through the National Highway Programme, as it did not fare well in terms of the budgetary requirements and efficiency.

All in all, Slovenia has an open legislative framework for the development of PPPs. Simoncic et al. (2012) also stated some reasons for the lack of PPP projects in Slovenia in transport infrastructure. According to an official report from the Ministry of Finance (2009), the current lack of real activity on PPP projects is connected with a large number of municipalities that are financially too weak to participate in PPP projects and also the fact that undersized projects do not stimulate enough investment interest from the private sector. Moreover, the structural EU funds played a minor role, although EU regulations were already attempting to change this (COM, 2009, 615). Finally, the organisational Unit (of the Ministry of Finance) responsible for PPPs acts too passive and; as a public partner, it does not give enough stimulation to the private partner to get involved in PPPs.

Against the above background and using the BENEFIT project<sup>74</sup> *Matching Framework*, the present paper analyses three road infrastructure projects in the two countries and illustrates the key factors securing success, while also indicating reasons of lesser performance and key vulnerability due to the economic crisis. The PPP and public projects considered are briefly described in the second section. The methodology adopted is presented in the third section, followed by the analysis of projects vis-à-vis the BENEFIT Matching Framework, leading to lessons learned, which end the paper.

## 2. Projects Profiles

The BENEFIT project addresses the delivery of transport infrastructure via a system's approach described through the Matching Framework (Pantelias et al. 2015). Its building blocks are typology indicators describing the key elements of the Matching Framework (Vanelslander et al. 2015;

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<sup>74</sup>The BENEFIT (Business Models for enhancing Funding and enabling Financing for Infrastructure in Transport) project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 635973.

Voordijk et al. 2015; Mitusch et al. 2015). An integral part of the analysis is the collection of information and data that will act as input for the calculation of the indicators of the BENEFIT Matching Framework. In this approach, data for each project was collected through a pre-defined protocol that facilitates systematic data collection and cross-comparison across the complex nature of each individual project that was built on the already developed contextual “Ws” framework (Rouboutsos 2010), addressing the “what”, “why”, “who”, “whom”, “which way”, “where”, “when” and “whole environment”, as the key elements of any PPP scheme. The latter also allowed for the generation of the respective typologies. Data was collected through a combination of extensive literature review and direct interviews with prominent stakeholders of each project. Hence, this section presents a brief narrative on each project analysed (Rouboutsos 2015; Rouboutsos et al. 2013, 2014).

With regard to Norway, the first PPP transport project E 39 Klett-Bardshaug is considered, one of the three PPP roads chosen by the Government of Norway, as pilot projects to examine whether the model is more successful in comparison with public governance models. It started in 2003 and finished in 2005. In Slovenia, two road transport infrastructure projects constructed by public funds are analysed for comparison purposes, the Maribor-Pince highway and the Koper-Izola Motorway. The construction of Maribor-Pince highway started in 2005 and finished in 2008, just before the economic crisis, while the Koper-Izola motorway started in 2007 and finished in 2015, due to complaints with public procurement and bankruptcy of the main contractors.

### ***E39 Klett-Bardshaug, Norway***

E 39 Klett – Bardshaug in Sør-Trøndelag County is the first PPP project in Norway. The main reasons for choosing the concession model were to allocate roles and responsibilities according to the principles of national road administration and to allocate risk where it can be most efficiently handled.

The Norwegian Public Roads Administration (Statens Vegvesen) is responsible for the planning, construction and operation of the national and county road networks, vehicle inspection and requirements, driver training and licensing. On matters pertaining to the national roads, States Vegvesen is under the direction of the Ministry of Transport and Communications, with the objective to develop and maintain a safe, eco-friendly and efficient transport system. The private company, Orkdalsvegen AS, is the single purpose vehicle (SPV) jointly formed with Skanska Infrastructure AV and John Laing Infrastructure Ltd. Skanska Norway is a key subcontractor assuming full responsibility for the operation. Orkdalsvegen's remuneration is based on the road's availability and quality. States Vegvesen aims to increase safety on the accident prone route and to provides the opportunity for project sponsors to demonstrate their skills. In the region, E-39 is one of the most important roads. Businesses located along the road had a large need for transport services in sectors. and to access efficiently to air transport (terminal Vaernes). The new road is estimated to reduce costs related to accidents, time and logistics by more than NOK 1,000 M.

The traffic growth in the county was approximately 1.5% annually, whereas the traffic of the road had a growth rate of 2.5%. The E 39 Klett – Bardshaug had an average traffic ranging from 5600 to 8700 vehicles per day in 2000. The Institute for Transportation Economics forecasted in connection with the National Transportation Plan 2002 – 2011 that there would be an annual traffic growth of 1.8% by 2012 and 1.5% thereafter. For comparison, the annual traffic growth on the actual PPP part of the E 39 had been 2.5% on average the last eight years prior to the tender process. The agreement covers a 27-kilometer stretch of the E39 highway between Klett and Bardshaug and includes a total of 10 kilometers of tunnels and 12 bridges, of which the longest is 240 m.

The total cost is EUR 200 M approximately (NOK 1,600 M), EUR 125-150 M (aprox.) for construction and EUR 2 M per year (EUR 50M overall for 25 years) for maintenance and operation. The project was conceived in 2001, with the call for tender launched in 2003 and the contract approved (signed) in 2003, reaching financial close in the same year. The motorway opened in 2005. The project was 100 % financed by Orkdalsvegen AS, and the financing structure is a consortium managed by Nordea financial group (1% equity, 9 % subordinated loan, 90 % bank loans). Skanska and Laing Roads Ltd. each invested around NOK 73M (EUR 9 M). The Norwegian Parliament

decided that in the selected PPP model by giving the full responsibility for designing, constructing, building, financing and operating a road section for 20-30 years.

The concessioner's remuneration is based on the road's availability and quality, emphasizing increased safety with a bonus, incorporated in the contract related to reduction in the frequency of accidents. The performance of the private contractor in operating is also measured by monitoring the operation of key systems on the road such as lighting, air quality and safety systems. The State is responsible for traffic risk in the project and traffic forecasts have been estimated. The PPP Company may receive a compensation for wear of the road if HGV (Heavy Goods Vehicle) traffic exceeds a certain level above the specified traffic forecasts.

The project has proved to reduce the number of accidents and improve the technical condition of the road, according to the state's requirements and objectives, defined in the contract. The project is sufficiently profitable for the SPV to pay dividends to its owners. So far, the project has met the main objectives of both contractual parties.

### ***Maribor- Pince Motorway, Slovenia***

The Maribor-Pince Motorway is one of the main access road to the Hungarian border. With the implementation of the National Motorway Construction Program in the Republic of Slovenia (NPJA), the motorway section Koper – Lendava gained a special position on the country's traffic network, becoming also part of the TEN-T route Barcelona – Kijev. A part of this road from Maribor to Lendava became especially important due to the increase of international traffic from the Eastern-European countries, toward Hungarian border, which leading through the settlement centers was inconvenient and had a negative impact on safety and environmental conditions. (Hojs and Temeljotov 2016) .

The contracting authority is DARS, Motorway Company in the Republic of Slovenia. DARS is a joint-stock company. In 1994, the Republic of Slovenia transferred the management of all existing motorways, as well as relevant infrastructure and plant to DARS d. Thus, DARS has assumed the right to collect motorway tolls as a source of income necessary for the management and maintenance of Slovenia's motorway network, as well as an important source for building new ones.

The financing of motorway infrastructure projects is realized through the public budget of the Republic of Slovenia - public projects with a credit guaranteed by the state. All the main plans are approved by the parliament. The construction was financed through three key sources: Public budget, European fund, and European Investment bank (loan). Operation and maintenance is financed by direct tax sources (fuel tax, user fees -tolls and vignette). The calculated financial cost for the construction of the entire motorway section Maribor – Pince was 628.363.700 EUR. T20-year flow of costs and benefits were analysed according to different scenarios of traffic volume, based on the net present value criterion..

There were open public tenders for all phases of procurement (design, build). First, the company got a design and building permit; after that, tender for construction was opened. There were 12 design contracts and procurement of construction was divided in 15 LOTS. Construction started in 2005 and finished in 2008. The GDP growth from 2005 to 2007 was higher than expected in 2002. After construction, all highways became a part of the national network. DARS is responsible for operation and maintenance. DARS d.d. had a standard contract related to FIDIC (Fédération Internationale Des Ingénieurs-Conseils) norms with a few exceptions in the field of dispute resolution.

The performance of the motorway is positive. The indicators, which were used for the evaluation of different stages of the project, were time schedule, project finance, quality checking and monitoring of the environment. Reliability was measured by ex-ante (forecasted) and ex-post (observed) share of delayed traffic. Availability was measured by ex-ante and ex post days/year open to traffic. Maintainability was measured by ex-ante and ex-post maintenance costs. Safety was measured by ex-ante and ex-post total accidents and fatalities per 1000 vehicle-km per year. Cost of investment was almost 10% lower than expected, due to better geo-mechanical conditions (less construction). The impact of agreed request of complementary works on costs was around 5% - some claims were made, regarding unit costs.

The project is successful. Actual traffic is higher vs forecasts. Income is higher than expected, due to many trucks driving from East to West and vice versa. There were no delays in the initiation of works following award, nor in the completion of works. The main success was a new highway for local residents and other users. The old road is no longer over-congested and traveling time is reduced.

### ***Koper-Izola Motorway, Slovenia***

Slovenia has 46,6 km of coastline, which is an important part of the tourist offer. The relatively short coastline is unsuitable for tourist use, because of the state road running just off the coast. The project analysed entails the modification of the state road in the interior, in order to relieve traffic along the coast. The existing national road from Koper to Izola named H5 functioned as a short regional road with mainly domestic traffic between two major Slovenian coastal towns. During the summer time, the road was extremely burdened with tourism traffic. The road alignment did not permit normal driving conditions, without environmental problems and congestion. The local community was planning to close the road and use the coastal strip for tourism purposes (Hojs and Temeljotov, 2016).

The expressway Koper - Izola is part of the future expressway H 5 Koper - Lucija, which takes over traffic from the current main road to Croatia border. The section is 5.20 km long and starts at the existing four-lane coastal road before connecting to Koper, and ends with a connection to the existing four-lane coastal road in Izola. It also includes the twin-tube tunnel Markovec of 2.1 km length. The traffic forecast estimate in 2003 was double the number of vehicles in 20 years.

With the implementation of NPJA, the motorway section Koper – Izola gained a special position in the country because of its specific geographic position. The pre investment study for the construction of the Koper–Izola section was based on cross section width and a possible phased construction. The results of the study proved that the construction of the motorway cross section was to be the most favorable. Costs and benefits were analysed for a 20 year period, according to different scenarios of traffic volume using the net present value criterion. Results showed that the construction of the section Koper –Izola was financially feasible. The investment cost for the entire project was estimated at 174 MEUR (fixed price on 2013) and the final cost was 164 MEUR. It was financed by state budget money. Operation and Maintenance is financed by direct tax sources (fuel tax, user's fees - tolls and vignette).

The project started late 2007 and finished in 2015. The main reasons for the delay were: complaints on public procurement, bankruptcy of the two main contractors and starting of new tenders for completion of works. There were open public tenders for all phases of the project (design, build). DARS funded all project phases. There were 10 contracts for construction (because of bankruptcy). After construction, DARS becomes responsible for operation and maintenance.

The indicators, which were used for the evaluation of different stages of the project, were time schedule, project cost, quality checking and monitoring of the environment. Reliability was measured by ex-ante (forecasted) and ex-post (observed) share of delayed traffic. Availability was measured by ex-ante and ex post days/year open to traffic. Maintainability was measured by ex-ante and ex-post maintenance costs. Safety was measured by ex-ante and ex-post total accidents and fatalities per 1000 vehicle-km per year. Cost of investment was almost 5% lower than expected, due to the better than expected geo-mechanical conditions found in tunnel. All measurements after the opening cannot be provided yet, since the road was opened in June 2015. The motorway was only recently opened to traffic, and solely on the basis of time to completion, it was unsuccessful; however, from other aspects – financial, social and environmental, it is generally considered as successful.

The key characteristics/features of the above projects are summarised in Table 1.

Table 1. Project key characteristics

Project Name	Year Awarded	Contract duration (years)	Status	Construction Budget MEUR (2013)	% public contribution	Length km	Connections	Other Activities	Operated by
E39 Klett-Baardshaus	2003	27	Operating	200	0	27	With other network	Service stations	Concessioner
g Maribor-Pince	2008	/	Operating	630	100	68.8	With other network	Service Station	Public
Motorway Koper-Izola	2008	/	Operating	174	100	5.2	With other network	-	Public
Motorway									

### 3. Methodology

In contrast to previous research that mainly focused on particular aspects of the transport infrastructure delivery, failing to take into consideration the entirety of factors that may influence outcomes, the BENEFIT EU funded Horizon 2020 project takes an innovative approach to analyse, PPP and public funding schemes by conceptualising transport infrastructure projects as a system of interrelated elements, which also bears specific inputs and produces specific outcomes that characterise the “performance” of each infrastructure investment. The aforementioned system includes the following key elements: Implementation context, Transport mode context, Business Model, Governance, Funding scheme, and Financing scheme. These elements are transformed into typologies, where key characteristics and drivers with respect to the funding and financing of transport infrastructure are identified and organised into dimensions with quantifiable indicators/proxies used for their measurement (Roumboutsos 2015; Vanelander et al. 2015; Mitusch et al. 2015; Voordijk et al. 2015; Pantelias et al. 2015). In this respect, the complexity of transport infrastructure funding and financing and the multiple factors involved are reduced to nine (9) indicators, descriptive of the elements of the respective system. A dynamic system approach has been adopted in mapping the interrelations of the typologies influencing its functionality, i.e the *Matching Framework*, based on the premise that various typologies interact with each other by forming feedback loops. The consequence of this interaction is an impact on project performance. However, capturing the marginal effect of these interactions on the typologies concerned would be impossible. Consequently, the system model aims to be used for mapping and “reverse engineering” various system snapshots, rather than for building up project performance through a continuous process with a clear starting and ending point (Pantelias et al. 2015).

Accordingly, through the estimation of the 9 indicators and establishment of their interrelations, the scope of the proposed methodology is not to assess a project’s success or failure, but rather to identify those indicators and their related combinations or interactions that would have a positive or negative effect on a particular outcome or a combination of outcomes, as the basis of understanding project performance. In other words, indicator values are investigated in terms of how they capture and reflect changes in anticipated project performance.

In the context of the present research, four outcomes are being studied, namely: (i) Actual vs estimated Cost to completion, (ii) Actual vs estimated Time to completion, (iii) Actual vs forecasted Traffic, and (iv) Actual vs forecasted Revenue. Typologies and related indicators, as well as the system’s performance outcome variables are described in more detail in the following.

The qualitative comparative analysis performed herein, combining the case study structured narratives and indicators’ framework, is based on a constructed model that could be considered as structural, dynamic and heuristic that serves to undertake an ex-post evaluation of the 3 projects with a view to identify the reasons leading to the outcomes of these cases and, whether some factors are recurring. This ultimately leads to the derivation of lessons learned with regard to the funding and financing of transport infrastructure via the comparison of findings across the road projects.



**Definition of typologies and indicators**

A typology concerns groups of factors describing a project that contribute in demonstrating a particular behaviour. To this end, a typology is identified for each element of the transport infrastructure delivery system, which, in turn, is described by indicators that provide “values”. The indicators together with their related variables and factors constructing these, are summarised in Table 2.

Table 2. Typologies and Indicators

Typology	Indicator	Variables	Composition
Implementation context	Institutional context	Political capacity, support and policies	Political stability & absence of violence index ; Control of corruption index; Democracy index
		Legal and regulatory framework	Rule of Law Index; Regulatory quality index; Liberalization of transport markets (OECD indicators of regulation in energy, transport and communications (ETCR) isolating the indicators related to transport)
	Financial / Economic context	Public sector/public sector capacity	Government effectiveness index; Government efficiency score (part of the global competitiveness index)
		Macro-economic situation	Macro-economic environment score (part of the global competitiveness index)
Transport Mode context	Reliability / Availability Indicator	Financial conditions	Financial market development score (part of the global competitiveness index)
		Availability	% of availability of transport infrastructure to users
Business Model	Cost Saving	Reliability	% time of disruptions during operation
		Ability to construct	Level of civil works/ technical difficulty; Capability to construct; Construction Risk Allocation Assessment of optimal construction risk allocation
	Revenue Support	Ability to monitor / control / plan	Public/Contracting authority capability in planning / monitoring
		Adoption of Innovation	Existence of Innovation (binary) Successful, or not, application of innovation
		Life Cycle Planning	Life cycle planning; capability to operate; operation risk allocation
		Level of Control	Business Scope; Project Exclusivity; network impact
		Potential to secure revenue/demand through (1) prime infrastructure	Greenfield ; brownfield; other transport infrastructure Demand / Revenue Risk Allocation Capability to operate
		(2) brownfield (3) other transport infrastructure	Demand Risk allocation - Assessment of level of control
Governance	Efficiency	Revenues from other non-transport activities	Share of non-transport activities based on project revenue description
		Number of bidders; Contract description	
		Contract type / description	
		Design / Construction Risk; Delays; Cost Overruns; Existence of Quality	

Typology	Indicator	Variables	Composition
Funding scheme	Flexibility	performance payments	
		Existence of Quality performance payments	
		Exploitation, Commercial/ Revenue & Financial Risk Allocation	
		Optimal operational performance (Incentives to Agent)	
		Existence of Renegotiation Clauses	
		Occurrence of early contract termination	
Funding scheme	Remuneration	Cost recovery	Expected revenues as % of full project costs
	Attractiveness	Risk of income	Share of each income stream on total revenues; Type / Risk of each income source
	Revenue	Cost coverage	Expected revenues as % of full project costs
	Robustness	Risk of revenues	Share of each revenue stream on total revenues; Type / Risk of each revenue source
Financing scheme	1- WACC (Weighted average cost of capital )	Debt capital / institutions, etc.)	Loans; Equity capital; Type of financiers (banks,

The **implementation context** is defined by the extent to which the political and legal and regulatory framework is conducive for large transport infrastructure projects, as well as the level of governmental support for PPP transport infrastructure projects. In order to substantiate the implementation context typology, indices developed by leading international organizations such as the World Bank, World Economic Forum and OECD were employed, including for example political stability and absence of violence, rule of law index, government effectiveness index, etc.

The **transport mode context** is essentially defined by two indicators. “Availability” has a direct impact on funding and financing of transport infrastructure and measures the % of availability of the transport infrastructure, or in other words the days in a year that the transport infrastructure is available to the users (Vanelander et al. 2015; Pantelias et al. 2015). Availability has a direct impact on funding and financing of transport infrastructure, since it is one of the most important performance indicators explicitly mentioned most of the times in transport infrastructure contracts. Reliability reflects the degree of trust for each mode and is measured as the % time of disruptions during operation (Vanelander et al. 2015; Pantelias et al. 2015). The impact of this indicator on funding and financing is indirect because disruptions during operation may reduce the availability of the mode, which is directly related to funding and financing. An analysis on PPP projects showed that the combination of indicators that has the highest impact on the success of the project is the combination of reliability and availability, i.e. high availability and high reliability will lead to a higher level of project success.

The **business model** typology reflects the overall level of robustness of the Business Model of the investment, i.e. the ability of a project to deliver on its aims and objectives in the fullest possible way (Vanelander et al. 2015; Pantelias et al. 2015). Two parts are included: the “potential cost saving function” and the “revenue support function”. The Cost Saving function is connected to the Revenue Support function only during the initial stages of infrastructure delivery, since the functionality of the operation can only be affected if the construction is completed. The Cost Saving function is composed of two parts: the Construction Cost sub-function and the Operation/Maintenance Cost sub-function. The first sub-function refers to the level of civil works/ technical difficulty of the project; the contractor’s capability to construct; the public/contracting authority’s capability in project planning / monitoring; and the level of optimal allocation of the construction risk among the contracting parties. The Operation/Maintenance sub-function refers to the existence of innovation and its successful (or not) application of innovation to the project; the project life cycle planning; the capability to operate; and the allocation of operation risk. The two sub-functions set in a series configuration as operation /maintenance depends on the realisation of construction. Once construction has been completed, this sub-function ceases to exist in the system. The Cost Saving function can be intuitively described to be measuring “ability” to avoid or reduce cost overruns. On the other hand, the Revenue Support function involves the following (sub)functions modelling (subject to their existence): (i) revenues from the

Greenfield part of the project; (ii) revenues from the Brownfield part of the project; (iii) revenues from other transport activities from within the project or potentially from different one(s) (cross-subsidisation); (iv) revenues from other non-transport activities from within the project or elsewhere; and (v) other wider impacts (economic, environmental, social, institutional). The Revenue Support function can be intuitively described to be measuring “ability” to increase revenues (Roumboutsos et al. 2015).

The **governance** typology entails two dimensions clustering characteristics, namely ‘efficiency/effectiveness of governance’ and ‘contractual flexibility’ (Voordijk et al. 2015; Pantelias et al. 2015). The scope of project governance is limited to transactions reflected in the project contract, that is, the influence of external stakeholders on the project is not considered in the governance aspects. It is also assumed that cooperation-based project governance mechanisms reflected in the selected governance indicators generally have a positive influence on project performance and lead to more optimal project outcomes in comparison with traditional procurement and contracting procedures. The variables selected consider aspects of project governance such as early involvement of the contractor in the design and estimation of costs, procurement procedures, integration of design and construction, incentives and dis-incentives regime, risk allocation, flexibility of the contract and actions that enable the contracting authority to maintain bargaining power during possible renegotiations. The above reflects many aspects of the relations between the contracting authority and contractors.

The **funding scheme** typology includes two main dimensions, the revenue streams of the project and the remuneration scheme of the project contractor (Vanelander et al. 2015; Pantelias et al. 2015). More specifically, the revenue robustness dimension reflects the extent and risk of ability to cover the project costs from the revenues generated by or for the project. It is composed by the equally weighted variables “cost coverage” (revenue streams) and “risk of revenues”. The remuneration attractiveness dimension reflects the attractiveness of the remuneration scheme for investors and is composed by the variables “cost recovery” (income streams) and “risk of income”. Both dimensions affect the objectives of the public party. The objectives of the hypothetical private party are affected by the remuneration scheme.

Finally, the **financing scheme** typology dimensions (Mitusch et al. 2015; Pantelias et al. 2015) were based on the premise that an actual financing scheme reflects the risk-profile of the project as it is evaluated by the relevant (potential) investors in light of their own risk-return appetites. In other words, the financing scheme is interpreted as a combined result of project characteristics and sponsor characteristics.

The above indicators for each dimension are estimated based on a specific scoring methodology formulated for each indicator and related variable (Pantelias et al. 2015).

### ***Definition of performance outcomes variables***

Every transport infrastructure project produces outcomes, including project management outcomes (cost and time to completion and quality fit for purpose), transport goal outcomes expressed through traffic volumes served, as well as general transport goals (reducing travel time, reducing travel cost, relieving congestion, improving reliability of transport and improving safety of transport, etc.), business outcomes (e.g. revenues) and also general outcomes such as environmental, economic, social, and institutional. For the purpose of reducing complexity, the following four main outcomes have been considered in the present analysis:

- Actual vs estimated Cost to completion
- Actual vs estimated Time to completion
- Actual vs Forecasted Traffic
- Actual vs Forecasted Revenue (configured as a proxy based on actual vs forecasted traffic and contract renegotiations concerning revenue issues).

The first two outcomes are closely related to the construction phase of the project, while the last two are connected to the operational phase of the project. Traffic is a key outcome in connection with



transport goals and the justification of the public investment, while revenue describes the business case. Finally, a simple scoring scale has been defined for the outcome variables:

- Exceeding forecast = 1
- In line with forecast = 0
- Below Forecast = -1
- Far below forecast = -2

#### 4. Results

In accordance with the methodology described in the above, each project/case study can be essentially described along its lifetime through the values of the respective indicators and outcome variables. To this end, the estimation of the above nine indicators was conducted for the eight case studies. Their values (scores) were computed at certain points in the project lifecycle, which are assumed to reflect different performance states of the project. As they describe the key characteristics of each case at specific times, each set of indicators and outcome values is termed a “snapshot”. The first snapshot relates to the time of project award/ financial close, and results are presented in Table 3. It should be noted that at project award, all outcomes are assumed to be in line with forecast. Table 4 presents the results at the time of inauguration for the completed projects.

Table 3-Award/Financial close

Project Title/ Year of Award	E39 Klett Baardshaug 2003	Maribor Pince Motorway/ 2005	Koper Izola Motorway/ 2008
Indicators			
Institutional	0.81	0.64	0.68
Financial Economic	0.738	0.595	0.683
Reliability/Availability	1.00	1.00	1.00
Governance	0.563	0.563	0.500
Cost Saving	0.722	0.208	0.196
Revenue support	0.200	0.151	0.152
Remuneration	0.333	1.000	1.000
Attractiveness			
Revenue Robustness	0.667	1.000	1.000
Financing	0.719	1.000	1.000
Outcomes			
Cost Overrun	0	0	0
Time Overrun	0	0	0
Traffic	vs 0	0	0
Forecasted			
Revenue	vs 0	0	0
Forecasted			

Table 4-After Inauguration

Project Title/ Year of Inauguration	E39 Klett Baardshaug 2005	Maribor Pince Motorway/ 2008	Koper Izola Motorway/ 2015
Indicators			
Institutional	0.82	0.68	0.66
Financial Economic	0.793	0.683	0.433
Reliability/Availability	1.00	1.00	1.00

Governance	0.563	0.563	0.500
Cost Saving	0.556	0.041	0.279
Revenue support	0.200	0.151	0.152
Remuneration Attractiveness	0.333	1.000	1.000
Revenue Robustness	0.667	1.000	1.000
Financing	0.719	1.000	1.000
Outcomes			
Cost Overrun	0	1	1
Time Overrun	0	-1	-1
Traffic vs Forecasted	0	1	0
Revenue vs Forecasted	0	1	0

The above sample can be divided between the Norwegian PPP road and the two Slovenian public funded cases. Results are discussed in terms of the four main outcomes.

### *Cost outcome*

Indicators with an impact on cost to completion performance were found to be (Roumboutsos et al. 2015; Mladenovic et al. 2015): The Institutional Context, the Financial Economic Context, the Governance, the Cost saving indicators and to a lesser degree the Revenue Support Indicator. Focusing on the Implementation context indicators at the award stage, which corresponds to initial planning, in the Norwegian case the Implementation indicator was high, both from the Institutional and Financial perspective, Governance was lower and Cost saving from the Business Model was also lower. The Slovenian cases have slightly lower Implementation indicator values than Norwegian one, meanwhile the Governance indicators are lower, and the Business model is very low. In addition, for the first wave projects in Slovenia, the macroeconomic outlook was positive (Maribor Pince), while for the second wave, the macroeconomic outlook was hampered by the 2008 credit crunch. Accordingly, the cost performance resulted in line with initial estimations for the first wave of projects, while motorways of the second wave have been seriously impended, also incurring a loss in the cost saving indicator.

### *Time outcome*

Similarly to cost, the Institutional Context, the Financial Economic Context and the Governance affect the time to completion, with a stronger impact this time of the Revenue support indicator (Roumboutsos et al. 2015; Mladenovic et al. 2015). Again, satisfactory Governance and Revenue support at award stage for most projects sustain the somewhat marginal Implementation context. Regarding the outcomes, the Slovenian Koper-Izola motorway case, which started after the economic crisis, shows the big drop in the Financial Economic indicator. Meanwhile, the Financial Economic indicators for the Slovenian case Maribor-Pince highway, which was constructed before the economic crisis and Norwegian E39 Klett-Bardshaug, which was not affected by it, demonstrate higher values.

### *Traffic outcome*

The Financial Economic context is the core factor influencing the achievement of the traffic outcome, together with the Institutional, Remuneration and Revenue scheme (Roumboutsos et al. 2015; Mladenovic et al. 2015). At award stage, all the PPP projects depict a marginal to low Remuneration Attractiveness, which is however, counterbalanced by a strong Revenue Robustness. Performance after inauguration with regard to traffic volumes is also in line with expectations. The Norwegian case, with a traffic volume in line with expectations, shows a higher value of Financial economic indicator and stable Remuneration attractiveness and Revenue robustness. Both Slovenian cases were public projects, so the Remuneration attractiveness and Funding scheme indicators are by default 1.0. The Slovenian cases show differences in the Financial economic indicator regarding the time of implementation, before and after economic crisis. Both are performing very well; in the Maribor case, the traffic outcome is higher than expected.

**Revenue outcome**

Remuneration Attractiveness together with the Financing indicator were found to be the main indicators influencing the revenue outcome (Roumboutsos et al. 2015; Mladenovic et al. 2015). Beginning with the award phase, the Remuneration Attractiveness is marginal for PPP projects, while the Financing indicator is on the lower side only for the PPP cases indicating a stronger contribution from the private sector not supported or guaranteed by the state. For the operating projects, revenues are in line with original forecasts.

**5. Lessons learned**

In light of the above analysis, this section summarizes the lessons learned with a view to identify success factors for road transport infrastructure delivery through PPP, while also pinpoint those leading to poorer performance and vulnerability to the economic crisis. The Norwegian PPP case shows a stability in project designing, construction and performance. In the Slovenian cases, it is seen that a significant time overrun appears, due to the bankruptcy of construction companies after the economic crisis. In addition, it is evident that good governance improves the potential of achieving cost and time targets. To this end, a combined and optimal implementation of procurement procedures and contractual arrangements may be reflected in an increase in the likelihood of meeting cost and time goals.

Regarding the Business Model of the transport investment, factors related to Cost saving, such as technical difficulty, appropriate risk allocation and life cycle, were found to improve the chances of achieving cost and time goals, while also creating resilience during the deterioration of a country's macroeconomic conditions. Adding to the above, other elements of the Business Model such as project scope, exclusivity and infrastructure connectivity appear to improve the chances of meeting cost and time targets.

The strong Revenue robustness indicator that describes the project's ability to generate revenues increased the probability for achieving traffic and revenue outcomes for the four successful projects in operation. High values of the financing indicator shows the probability of achieving revenue targets, in the sense that the more the public guarantees the less the probability of reaching revenue targets.

On a modal basis, it is evident that road projects are more vulnerable to the macro-economic impact, since these usually demonstrate a lesser "level of control" in comparison with other infrastructure modes, such as ports or airports that boast unique characteristics and hold a stronger position in a network. The main reasons for cost and times overrun in road projects are typically related to scope changes, economic crisis, and sometimes to other technical issues.

The E39 Klett – Bardshaug is an overall successful project with positive performance in terms of all four outcomes (cost, time, traffic, revenue). This success level is preserved even in the case when a PPP scheme incorporate significantly higher risk financing sources. Besides this, the favourable implementation context definitely contributes to the project's robustness to a large degree, but the ex-post scenario also proves that its internal structure is resilient even if the macro-economic environment worsens.

Slovenian case studies are publicly financed project with an availability-based funding scheme that, however, were vulnerable to the implementation context in Slovenia. The rating of cost to completion, time to completion and traffic outcomes seems to be subject to the poor exogenous factors, especially after the start of the economic recession in 2008. The ex-post analysis showed that in a country with no PPPs, the project could have been procured as a PPP with a likelihood of achieving better outcomes.

It is important to acknowledge the small sample of case studies used in this analysis. This limits the possibility to draw definite tendencies and conclusions for the road infrastructure project delivery sector, but on the other hand allows for comparing how the typologies index has assimilated the cases performance.

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## **Trust in a viable real estate economy with disruption and Blockchain**

Jan Veuger  
Hanze University of Applied Sciences Groningen,  
Centre of Research and Innovation for Build Environment, Netherlands

E-mail: j.veuger@corporaterem.nl

### **Abstract**

Does real estate still have the value that it once had, or will the valuation of real estate change due to surprising products and services, innovative business models, different market strategies, innovative ways of organizing and managing in the (real estate) markets? Innovation revolves around good facilities in an attractive and stimulating environment. Take disruptive real estate. The driving force behind these developments are new technology, viability, organizing differently and managing, and these have a big impact on the valuation of real estate. Established names like Nokia, Kodak, Blockbuster, Oad, Free Record Shop, Hyves and V&D collapse, and others, like Hema, Shell, hotel chains and healthcare institutions are the least bothered by it. However, disruptive organizations like Amazon, Zalando, Uber, Tesla and its competitor Faraday Future, who wants to exceed Tesla in everything, clearly respond to viability in the environment, and this is determinative for competitive strength and thus impacts the current and future valuation of real estate. Blockchain – a distributed database that contains a growing list of data items and that is hardened against manipulation and counterfeiting - plays an important role in that. The notaries and brokers have already experienced this in the recent period, and it will continue to have an effect on real estate owners, financiers, users, builders, brokers, notaries and the cadastre. The real estate world finds itself at a tipping point of a transition: a dramatic and irreversible shift in (real estate) systems in society. This article is a State of the art of Disruption, Blockchain and Real Estate in the Netherlands and international.

**Keywords:** Disruption, Real Estate, Blockchain, Trust, Value



## Introduction

Does real estate still have the value that it had, or is the valuation of real estate going to change due to surprising products and services, innovative business models, other market strategies, innovative ways of organizing and managing in (real estate) markets? Innovation revolves around good facilities in an attractive and stimulating environment. Take disruptive real estate. The driving forces behind these developments are new technology, manoeuvrability, organizing differently and management. These forces greatly influence the valuation of real estate. Established names like Nokia, Kodak, Blockbuster, Oad, Free Record Shop, Hyves and V & D are collapsing, and, for example, Hema, Shell, hotel chains and healthcare institutions are the least affected. Disruptive organizations like Amazon, Zalando, Uber and Facebook, who are going to develop a complete residential area in California, Tesla and its competitor Faraday Future, who wants to surpass Tesla in everything, respond to viability in the environment. This viability determines the competitiveness and thus affects current and future valuation of real estate. Blockchain, a distributed database that maintains a growing list of data items and that is hardened against manipulation and counterfeiting, plays an important role in that. Notaries and brokers have already encountered this during the recent period, and it will have further impact on property owners, financiers, users, builders, brokers, notaries and the land registry. The real estate world is therefore at a turning point of transition: a profound and irreversible tilting of (real estate) systems in society, and 'technological opportunities that we can hardly anticipate' (Dijkgraaf 2017). The International Monetary Fund (IMF) also acknowledges the major possible consequences of changes in our financial and thus real estate system and held a meeting at the highest level in April 2017 about Blockchain, chaired by Christine Lagarde.

Viability determines competitiveness strength and generally has four building blocks for its development: (1) looking outward (external focus), (2) following good examples closely (connecting leadership), (3) self-organizing units (flexible work organization) and (4) modelling and generating (flexible processes and IT). To develop that viability, a number of competencies are Important, such as continuous insight into customer behaviour, process-oriented steering, dynamic skills, strategic alliances and networks, and meaningfulness. Disruption is usually associated with the development and application of new technology by organizations. Characteristic of these organizations are often a small headquarters, few staff, own results responsibilities, autonomy of the various parts and professionals, and flexibility of staff upon request. Fundamental changes in the market in housing, work, education, healthcare and transport will therefore affect real estate, as well as technology in buildings. But which real estate fits these new developments of disruption, and what is Blockchain's impact on real estate? First of all, we consider how disruption works.

## What is disruptive real estate?

Disruption is a predictable pattern in all sectors where start-ups use new technology (Vermeend and Smit 2017) to make it possible for 'something new and small' to penetrate 'something existing and big' in a short space of time. At the moment, many start-ups are disturbing different sectors by competing with the established representatives. But how does disruption work? Ex-Microsoft executive Steven Sinofsky gives an answer through a framework he designed in which he distinguishes four phases of disruption: disruption, evolution, convergence and re-imagination. The four phases disruption, evolution, convergence and re-imagination of disruption are specified in the table below. On the right, we see the established order (incumbent); on the left, we see the challenger (disruptor) who grows from a niche solution to an advantage for everyone.

Phase	Challenger (disruptor)	Incumbent (established order (incumbent))
<b>Disruption of established order</b>	Introduces a new product with a distinctive approach, knowing that it does not meet all the needs of the entire existing market but is an improvement of state-of-the-art technology and/or business.	The new product or new service is not relevant to existing customers or markets (also known as 'denying').
<b>Rapid linear evolution</b>	Quickly adds features and capabilities, thus building up the value proposition based on the responses of a select company of early adopters.	Compares the complete product with its own new product and sees defects (also known as 'validation').
<b>Attractive convergence Completely new invented product</b>	Sees an opportunity to broaden the customer base by attracting slow movers. Also sees the limitations of the new product and learns from what has been done in the past, but applied in a new way. Potential risk is constantly being addressed with even newer technology and business models, while the focus shifts to the 'installed base' of the established order.	Considers adding a certain disruptive core feature to the existing product line to show that attention is paid to future trends while at the same time interfering with existing customers (also known as 'competing'). One possible risk is that you cannot see what the true value of disruptive products is or what the potential is in relation to the limitations of existing products.
<b>Completely new invented product</b>	Approaches a decision point because newcomers in the market can take advantage of everything that your product has demonstrated without taking into consideration the old customers like before. Do you focus more on the legacy of the market or do you continue on this path?	Is too late to respond and begins to define the new product as part of a new market and existing product as part of a larger, existing market (also known as 'withdrawal').

Figure 1: The four phases of disruption specified

The renowned magazine *The Economist* praised the *disruptive-innovation* theory of Clayton Christensen as '*one of the most influential modern business ideas*' ever. The theory has been repeatedly used to explain the success of companies like Netflix, Spotify, Uber, Airbnb, Faraday Future and Tesla. Disruption is the new religion preached from Silicon Valley. However, the question is how much value we should attach to this faith?

The first publication of the basis of the theory of disruptive innovation is by Clayton M. Christensen, dating back to 1995 (Christens and Bower, 1995) when the internet was barely existent. According to him, for example, Uber and WhatsApp are not typical disruptive innovations. According to him, it is just a simpler product for a target group with little money and lower expectations. Examples of those products are the smartphone with ever-new apps that displace the personal computer, or Bitcoin replacing current payment traffic. A newcomer is therefore in the optics of Christensen much more successful than innovations that make an existing market because this market would respond directly to external innovations. So one disruption is not like another. Disruption is a predictable pattern in



sectors where emerging companies use new technology to provide cheaper and inferior alternatives to products of established players in the market. An example of this is Toyota, which took on the battle with Detroit a few decades ago.

Disruption matters and brings about physical changes. Google in Silicon Valley evolved there where people are physically brought together in buildings that are primarily aimed at exchanging knowledge and stimulating creative processes. Behaviour that shakes loose new technology leads to new business models: the social spin-off is at the heart of the revolution (Bakker 2017). The true revolution often takes place in everyday practice. An investment like the Google data centre Groningen is a result of a convergence of things. Groningen has been chosen precisely because of the availability of energy, good infrastructure, the Dutch climate and the point where the fibre-optic connection between the United States and Europe passes by and thereby forms a global network. Innovation and productivity are also strongly promoted by high population densities and masses, fast transportation systems and highly specialized universities such as the UMC Groningen with its new Proton Therapy Centre, The State University of Groningen and the Hanze University of Applied Sciences Groningen, with its knowledge centres. Imagine if you are evaluated as an organization based on, for example (Sfirtsis and Broekman 2016):

- the number of visitors per quarter in a retail chain;
- the contribution of an office concept to employee satisfaction;
- the flexibility of a shopping concept based on seasons and lifestyles;
- the amount of time a property is rented by a user; and
- effectively bringing together all the necessary parties (including the end user) to achieve the ultimate customer experience.

Then the (real estate) world looks different, if the user is really leading. Healthcare, for example, is also organized in a different way as a result of more new treatment methods than we have developed so far. Examples of these new methods of treatment include haemodialysis (kidney dialysis), monitoring high-risk pregnancies, chemotherapy (Erasmus Hospital), infusion therapies and palliative Intensive Care (Westfries Hospitals and Medical Spectrum Twente).

The foregoing examples indicate that these issues will affect current and future real estate with themes such as: (1) clear, distinctive value propositions, (2) price erosion, different margins and price competition, (3) valuation in the short and long term, (4) overcapacity, (5) demand changing faster than supply and (6) power imbalance in the real estate (value) chain.

The disruptive changes in the real estate world, as we know it, will even further strengthen and demand different real estate. Buildings that do not take into account the rapid changes are less viable. Organizations that use real estate as a business asset and take lessons learned from the Corporate Real Estate Management field to heart are more viable (Veuger 2014: 132). Real estate must be adaptable, disrupting, in a good location and sustainable and distinctive. And it must be all of that in a context where the spatial and built environment stimulates innovation and promotes knowledge sharing and cooperation. Within the city of Groningen and beyond, the surrounding areas demand a well-functioning network to make spatial connections and share facilities. At the national and international level, concentration of highly specialized developments and top research institutes is needed. Innovation revolves around more than excellent facilities in an attractive and stimulating environment. Take disruptive real estate. If real estate can be disruptive, what relationship is there with Blockchain? When we want to understand the world of Blockchain, we need to understand the innovation of the currency of Bitcoin, which is based on the underlying technology called Blockchain.

### **The relationship between Blockchain and Bitcoin**

Blockchain could have a huge impact on the value chain in real estate. This includes thinking about efficiency, transparency, ownership, value (transfer), automation and service. If we want to understand the world of Blockchain, we need to understand the innovation of the currency of Bitcoin, which is based on the underlying technology (Seibold and Samman 2016) called Blockchain. Bitcoin is a

combination of four individual elements: (1) cryptography, (2) a peer-to-peer network, (3) an open-source protocol and (4) a shared ledger. This makes it a phenomenon that people are enthusiastic about. The applied cryptography (first element) is complex, but comparable with banks, which use it to secure their transaction traffic. The peer-to-peer network (second element) we already know from the exchange of music exchange. The essence of this is that a network of parties, called miners, validates the transaction register worldwide. This means that there is no exclusive right to that network, and it is not possible to turn a particular location on or off. The network is connected with the third element, with which the underlying software is fully public: an open-source protocol. This allows everyone to see how the software is programmed. All of this is unique in that Bitcoin is already an alternative money on the internet, and it is growing very fast. To illustrate: on January 1, 2017, the Bitcoin rate went through the \$ 1,000-dollar limit (953 euros). The most striking thing about Bitcoin is that value is transferred without involving a trusted third party such as a bank, notary, broker or cadastre. That is unprecedented relative to the current financial and real estate world with a third party as a safe agency between the buying and selling party. But is *Bitcoin the future?* No, according to *Blockchain expert Dennis de Vries*<sup>1</sup>, it is not, but the underlying Blockchain technology is.

The internet makes it possible to transfer information quickly, cheaply and paperlessly without the need for any intermediaries. Blockchain gives the same benefits for transferring values. The internet is used to transfer word and image; Blockchain, for money and asset transactions. Blockchain is a combination of two elements: (1) a shared and distributed ledger with synchronized data spread across multiple sites, countries and/or institutions and (2) cryptography: a digital token with a monetary value. Blockchain has a number of benefits in realizing real estate transactions: preventive mediation, fraud prevention and the use of smart contracts. But what is the meaning of Blockchain for the real estate sector?

### **Blockchain and the real estate sector**

The financial sector has become excited about how Bitcoin has programmed the value transfer and how the transactions are processed without having a third party, such as the government or bank, part of a transaction. All banks worldwide have their own IT systems that are complicated, communicate inefficiently and let transactions take place. There is a realization that this can be much simpler with a customized open-source protocol. And why would that not apply for real estate? An important discussion about this theme also concerns the cadastre, with the registering of property ownership. Blockchain can be a more efficient way of registration in order to transfer ownership. However, the critical footnote should be placed here that real estate also exists in the real world in trading with Blockchain. There will have to be a clear connection between the administration in Blockchain and the physical property. At this time, this connection is not (yet) scientifically proven. What we see is that heavy investments are being made in, for example, a new global registration system on the basis of Blockchain and that established parties see opportunities to make processes simpler and to develop more user-friendly systems.

Key advantages of Blockchain is that changes can no longer be made once a block has been added. This means that errors must always be corrected before a transaction can be done. Adjustments always remain visible in Blockchain, thus keeping the registry transparent and providing the basis for trust in the system. This allows, for example, duplicate expenses to be avoided and no shadow transactions can occur.

With the help of Blockchain, we can bring together all information about buildings and give access to parties who need the information. It then works as a kind of building passport. Thus, a data room is created in which different information from buildings is stored. Any interested party can add information from, for example, tenants, valuations, history and maintenance plans. Banks can also check the financing more easily and monitor, for example, cash flow. According to Yermack (2017), professor and expert on Blockchain, the work now done by auditors will disappear. With the Building Information Model (BIM), data will also exchange information about design and materials use that can contribute to a circular economy. Demolition of a building and responsibilities for installation technology become more transparent and clearer with BIM. With a change of ownership, it is also very easy to change the complete building passport. Other examples of application areas include title

registration, service costs, real estate as a service, building maintenance, settlements of various forms of taxation, real estate valuations such as the WOZ, refurbishment value for insurers and records of an Association of Owners (VvE).

## Two changes

The real estate sector will also face two fundamental changes: (1) the use of the Blockchain in the real estate sector itself and (2) the broad social impact as a result of the users of real estate. A first major change through the application of the Blockchain is in the registration and processes of real estate titles, due diligence processes, simplification of currently complex transactions, faster turnaround times of transactions and more liquidity (Wessels 2016). Blockchain's technology allows contracts to be smart and can therefore be executed under predetermined conditions. Real estate finance can also be further automated with Blockchain, or it can contribute to the simplification of crowdfunding. The big advantage of these movements is that the real estate market will become more transparent, the quality of (real estate) data will increase and fraud prevention becomes more effective. The second major change is the social impact as a result of designating the users of real estate. If we draw a comparison with the developments with the internet and its impact - see the social impact of smartphones - new patterns of users of real estate will change significantly. Existing institutions will disappear or change significantly, other parties will rise.

## Developments of Blockchain

TopTeam ICT has taken the initiative to establish the Blockchain Competence Centre (BC3), in which scientists, governments, social and industrial partners are working on building Blockchain expertise in the Netherlands. BC3 thus meets the concerns expressed by the FD about the lack of Blockchain expertise in the Netherlands. René Penning de Vries has been appointed by the Ministry of Economic Affairs as the standard bearer for TopTeam ICT.

Blockchain has the advantages of being more efficient, more transparent, faster and safer. But when can we expect Blockchain in the Netherlands? According to Jo Bronckers, chair of the International Blockchain Real Estate Association (IBREA) and the international trade association promoting the application of Blockchain in the real estate sector: *'I think we are at the start of this technological change. The first step was to build a network infrastructure that allows data to be exchanged. The real estate world also sees added value in this and is investing in getting more and better data. For example, an initiative such as the Real Estate Taxonomy, which streamlines the standardization and digitization of real estate data to improve the interchangeability of real estate data between banks, investors and valuers.'* (Real Estate Journal 2017). There are a number of movements to be distinguished at the international, national and regional level.

## Internationally

According to Jo Bronckers, chair of IBREA, the Netherlands should be the forerunner in Blockchain technology. It is expected that the disruptive power of Blockchain's technology will increase worldwide (KPMG 2016). For example, in Dubai there are already plans to have all government documents in Blockchain by 2020. Singapore is also accelerating developments in this area. Both cities are comparable to the Netherlands because the administrative layers are well-connected and the distances between the authorities are short. In addition, the Netherlands has a good digital infrastructure, a highly educated population and the Dutch easily adapt to circumstances. In addition to the fact that the Dutch government has adapted Blockchain, several pilots have also been launched in the real estate area in the Netherlands. Through this move, the possibilities for the real estate world can be explored and transformed into global entrepreneurship of and with real estate. Bronckers states: *'I see through the IBREA network what is happening worldwide, and I dare to say sincerely that we now have very good opportunities in the Netherlands to make this disruption work to our advantage.'* In 2016, the research of Spielman (2016) of the Massachusetts Institute of Technology (MIT) - one of the most prestigious technical universities in the world - appeared. This exploratory study into 'recording

property titles' compares the benefits and limitations of Blockchain with the current system of registration in Nashville (Davidson County), Tennessee. Following this thesis, they also launched an actual pilot project.

### Nationally

The Netherlands also has ambitions for working with Blockchain. This is evidenced by presenting an action agenda with the National Blockchain Coalition (Dutch Blockchain Coalition 2017) with three objectives:

1. Developing Blockchain building blocks, such as digital identities.  
The first step is to develop so-called digital identities that enable individuals, objects and legal entities to perform digital transactions as part of a Blockchain.
2. The realization of the conditions for utilizing Blockchain.  
Working on solutions in the area of legislation and acceptance.
3. Developing and realizing the Human Capital Agenda.  
For knowledge development, agreements are made about training, sharing knowledge and increasing skills, i.e. investing in human capital.

The founding partners of the National Blockchain Coalition are expecting Blockchain and digital trust to greatly affect financial services, logistics, energy supply and, eventually, healthcare. They mainly see positive effects on the autonomy of citizens, transparency of transactions, cyber security and reduction of administrative burdens. The participating parties in the coalition are: ABN AMRO, ING, Volksbank, Rabobank, PWC, Nationale Nederlanden, Havenbedrijf Rotterdam, Enexis, Alliander, the Koninklijke Notariële Beroepsorganisatie, Brightlands, the Ministries of Economic Affairs, Infrastructure and Environment, Security and Justice, Domestic Affairs and Royal Relations, the Delft University of Technology, Tilburg University, Radboud University, TNO, RDW, Rijksdienst voor Identiteitsgegevens, the Netherlands Organisation for Scientific Research, Kamer van Koophandel, Inspectie voor Leefomgeving en Transport and the CWI. The social perspective is introduced by ECP (Platform for the Information Society). Supporting organizations are: Financial Markets Authority, Betaalvereniging Nederland, the Nederlandse Bank, Dutchchain, Dutch Association of Banks, SIVI, StartupDelta and the Dutch Association of Insurers.

Pouwelse is currently leading the Delft Blockchain lab and is the founder of Tribler, the research team at Delft University of Technology. The Tribler team is the world's largest experimental research team working on self-organizing internet systems. The team focuses on defining an attack-resilient and legally valid social media infrastructure. *'We are still the only player with working technology in this area. We are running hard to go live this year'* (Pouwelse 2017). The prototype developed under the leadership of Pouwelse is provided with software terminals that enable other stakeholders to work on services around the Blockchain mortgage process. Examples of this are a service that bundles money offers to contracts that cover a mortgage application or market transparency facilitation services and static information about the online mortgage market (Zaal, 2017). Pouwelse: *'TU Delft is not going to be a mortgage lender, but we have made the technology that could trigger an online ecosystem of start-ups in and around financial services'*. The ABN AMRO Bank is responding positively to TU Delft's initiative. *'The collaboration and technology brings us insights into how the future with Blockchain can look, what the role of financial institutions is therein and what value we can offer to our customer as a bank'*, explains Head of Innovation Centre Arjan van Os (Zaal, 2017). ABN AMRO, in collaboration with IBM, has also launched a Blockchain experiment (Bikker, 2016), bringing together information related to the building. Due to Blockchain's 'single source of truth', banks are also convinced that through smarter contractual opportunities, the real estate industry is going to change significantly. Among other things, work is being done on so-called 'proof of concepts' to investigate how Blockchain can eliminate uncertainty about collateral taxation (Os, 2016). In addition to the research of Gout (2017) about one Block-mortgage, a Blockchain-inspired business model for mortgage financing, Dijkstra (2017) conducted exploratory research into the real estate management

process of sales and management. His research will reveal the potential opportunities lie for applying Blockchain in real estate processes and where this needs to be further elaborated.

The Municipality of Rotterdam, Cambridge Innovation Centre (CIC) Rotterdam and Deloitte have been working together since the beginning of 2017 to develop the first Blockchain application in real estate for the purpose of documenting rental contracts. As a result, start-ups can, for example, close rental contracts faster and easier. By documenting these rental contracts from the CIC network on the Blockchain, we can work more efficiently and management happens in a transparent manner. The next step in this project is to monitor rent payments. The project also includes the development and execution of pilots as part of the Roadmap Next Economy – a roadmap for the coming 10 to 20 years, with scenarios and trade perspectives – for 23 municipalities in the Metropolitan Region of Rotterdam-The Hague. The Roadmap aims to determine the impact of potentially disruptive technology like Blockchain by experimenting with it in the early stages. Within the project, five important steps have been taken:

1. Digitalizing building data: creating a Blockchain ledger with real estate information for any building that is can be converted and registered on Blockchain.
2. Digitalizing the ownership situation: linking the registration to the owner. The Cadastre and the Kamer van Koophandel are now playing a further role in this.
3. Transferring ownership: the holder of registration is the sole entitled party who can encumber the registration with obligations such as a rental contract.
4. Closing of rental contracts: multiple parties can work on signing the rental contract in the registration.
5. Unlocking contract information for third parties: during the life cycle, the property owner will share information with third parties, such as for (re)financing. With such changes, checks are performed on currency and completeness.

Two important reactions emerged during the presentation of the research results on 18 May 2017. Firstly: during the explanation of the developed platform, the responses were gauged among the attendees. 60% of them want to apply or are already applying Blockchain. 98% are convinced that Blockchain will affect the real estate market. Only 4% think there is too much transparency due to Blockchain. These results show confidence in Blockchain and that parties in the real estate sector want to get started. And secondly: the human factor is seen as the biggest obstacle to the actual application of the Blockchain. Blockchain is a disruptive innovation, potentially changing the current roles and tasks of players within the real estate market. In this sense, it is about more than just a technological innovation. Organizational change and adaptation of processes, work and methods, as a result of the technological capabilities that Blockchain will offer, is expected to be a challenge.

### **Blockchain and the impact on the value chain of real estate**

The value chain consists of the ownership of real estate and the cash flows around it for trading. In this value chain, the Cadastre, the notary, the owner and the banks play a role. Blockchain technology can play a role in efficiency in the chain. Whether, for example, the notary or the cadastre will maintain their role in the value chain is the question. As disappointing as it was for Kodak, the company was unable to take the step from analogue to digital photography, even the company itself had developed the technology. The real revolution in photography was outside Kodak because we started taking more pictures and sharing them with each other faster. This resulted in a different value chain than that of photo rolls, chemicals and photo paper.

The developments of Blockchain are comparable with the rise of the internet. Essentially, it is a global exchange of information, and the element of value exchange is now added by Blockchain. The unique thing about Bitcoin is it counteracts spending money twice. But the true meaning of the Blockchain technology for real estate processes still needs to be investigated. Many stakeholders see the developments, as well as developments around PropTech, but still have to find their own role. It is therefore mainly about cooperation in the value chain. For this we look at applications of PropTech, Blockchain and data ethics in the real estate sector and the changes in it.



## PropTech, Blockchain and data ethics

Before we continue with Blockchain, it is also important to look further into technology in user's buildings. PropTech is a merger of Property and new Technology, and refers to technology such as the allocation of parking and workplaces to users and apps that allow a workplace to be customized to personal preferences. Users often expect higher service levels, like people expect in other sectors such as banks, healthcare, education, and so forth. An example of a high level of real estate services is [zuidasoffices.amsterdam](http://zuidasoffices.amsterdam), which offers many facilities: hotels, restaurants, tailors, train times and a selection of offices. PropTech offers advantages for increasing user satisfaction, health and performance. New technologies like Virtual and Mixed Reality (VR/MR), artificial intelligence, the use of IT technology in industrial systems and PropTech (RICS 2017) are changing how we use, understand and interact with real estate. Digital transformation has an impact on the use of real estate, which should therefore be in part determinative of strategy for future-proofing, and thus determines the viability of real estate. How can Blockchain support this?

Characteristic of Blockchain is, like money, it can be spent once. A Blockchain transaction cannot be copied and is a parallel can thus be drawn to the real estate sector. The possibilities are in the value chain of real estate: ownership, possession, characteristics and transaction, the transfer of ownership and possession, with elements of transparency of money streams in the financial market around that. This is currently not (yet) elaborated. Blockchain technology can add value for the cadastre, notary or broker. A few but not an exhaustive list of examples of possible concrete applications are for example (DTZ, 2016):

- There have been laws and regulations for Alternative Investments Fund Managers Directive for real estate fund managers for a number of years. An important issue is safeguarding assets, i.e. determination of ownership. This problem is more effectively eliminated with Blockchain.
- Brokers can use Blockchain technology to register ownership of objects and in case of change through sales or rental, all relevant data can be easily checked.
- The use of Blockchain also makes it possible to document building characteristics, such as building drawings, BIM applications, maintenance history, ownership history and all other official documentation for a building that comes from different parties. This means that when transferring a building, all that documentation is automatically presented and transferred.

The artificial intelligence through algorithmizing of the Blockchain will increasingly play a role in the taking of decisions by learning organizations. Harari (2017) states that the world could be subject to dataism, a data belief that every human act is a matter of the right algorithms and sufficient data processing capacity. Internationally, only limited research is currently taking place on the influence of algorithms on society and, in particular, the economy. A proposal under Responsible data science in the Netherlands was rejected by the NWO in 2016 (Stolze 2017). Artificial intelligence and its influence on society is not new. It originated in the 1930s with Alan Turing's Turing Machine, with which he broke the German Enigma Code and started the end of the Second World War. Science has been looking for some time for a computer that can withstand the Turing test. Another example of the great influence of algorithms is, for example, the Coin algorithm developed by JP Morgan. This is a software program that can read through thousands of contracts in a short period of time and provide an opinion instead of 300,000 hours by ordinary lawyers (Stolze, 2017). It is good to realize that (thinking) processes and decisions are being outsourced by algorithms. This artificial intelligence cannot use a combination of hard and soft factors to make considerations. The question is whether we will use the big-data models correctly and not inadvertently bring about inequality, discrimination and reduced vigilance. That technology is developing faster than the adaptability of people is also not new: the parachute was invented only after the first plane flew. Ethics for individuals and organizations remains important for judging and deploying data well (RICS 2007a and 2007b) because we are producing an extreme amount of data that is increasingly difficult to secure, but also more difficult to organize, archive and keep accessible. But what are the changes in the real estate sector at the moment?

## Changes in the real estate sector

Looking at the activities in the Dutch real estate investment market, a quantitative analysis by the NVM (NVM, 2016b; NVM, 2017a) concludes that approximately 11 billion euros were invested in real estate in the Netherlands last year, of which approximately 8 billion euros was in offices, commercial buildings, shops and hotels. This investment market is driven mainly by the ample availability of capital, interest rates, economic recovery and more leases. For foreign investors, the attractive initial yield was above all a decisive driving force. The NVM further sees (1) that internationalization continues, (2) that there is an increased interest in offices, (3) that commercial spaces are popular, (4) that hotels in Amsterdam are popular, (5) that there is less interest in retail investments and (6) that there is great demand rental housing.

The real estate market in general is therefore constantly moving, but how can the real estate sector anticipate Blockchain? According to the Real Estate Report 2016 from the FGH Bank (2016), despite the recovery of economic growth and the greater investment willingness in the Netherlands, there still remains vacancy of about 40 million m<sup>2</sup> for which there is not yet a solution. This applies not only to offices and shops, but also to care homes, neighbourhood centres, churches, schools, showrooms, agricultural buildings and commercial buildings. This vacancy has arisen because we need less space to deliver the same economic performance. In addition to the excessive construction production, the overcapacity according to FGH is mainly due to the fact that the real estate sector has not adequately adapted to the changing environment. There are a number of changes in society and the economy that greatly affect the real estate sector:

1. The number of workers and consumers does not grow automatically
2. Existing Dutch sectors are changing under the influence of digitalization, automation and robotization. The (professional) population increasingly consists of 'digital natives'
3. The space usage per person is decreasing: the use of facilities is becoming more important than their ownership
4. Increasing internationalization of Dutch real estate users and investors.

Global developments affect the Dutch economy. Think of tensions on the world stage with wars and migrants, macroeconomic developments such as changing world trade, slowdown in growth in countries such as China, Russia, Brazil, Argentina and South Africa and users who want flexibility in products and services. The latter demands options and customized spaces in the real estate sector. The real estate sector is also a safe haven for investors. To keep it that way, according to the FGH, the investment and user market should also be balanced in the long term. This can be achieved by being conservative about adding unnecessary real estate meters to prevent capital destruction.

The Dutch economy is strong, but vulnerable. Our strength is in exporting products and services abroad, especially food and agricultural products. This is due to our high labour productivity, digital infrastructure and the use of smart applications. However, aging will decrease the number of workers. Therefore, we need to compensate with higher labour productivity to stay competitive. This requires innovation. A strong competitive position is an important pillar under the basic potential of Dutch real estate.

## How do we want to house ourselves, live and work in the future?

Young generations organize their lives and work in a new way. This has consequences for the demand for space and how it is used. New generations are looking for 'smart solutions' for all the issues in our society. Think of The Edge in Amsterdam, the icon of automation, or Patch 22 in Amsterdam, a smart wooden design for flexible use. The quality of the digital infrastructure and high-quality products offer more flexibility and quality for the user. Chains are more efficient and integrated and this means less time, less space, so less cost. The real estate sector therefore does not benefit from additional meters, but in strengthening existing locations through new construction or redevelopment, especially at the strong locations. It is not so much about the building (supply) but respond to the demand with total housing solutions. Consider the real estate as a flexible total service with, for example, flexible contracts.

## Conclusion

In conclusion, the scenarios indicate a slight (2%) to stronger (13%) increase in demand for rental housing in 2025 compared to 2016. There will be a sustained demand for housing because housing occupancy continues to decline, starters look later for a home to purchase and a larger part of the population is looking for flexibility and temporary housing solutions. Think of (temporary) second homes like expat houses or pied-à-terres. Only in scenario 2 is there a (slight) increase in demand for shops (2%) and offices (7%) in 2025 compared to 2016. This demand for space would arise as a result of productivity growth. All the other scenarios assume a decline in demand for shops and offices in 2025 compared to 2016, ranging from a decrease of 28% to 13%. The demand for commercial space decreases slightly in scenarios 1, 2 and 3 by 1 to 6%. The only increase in demand can be expected in scenario 4 with 2%.

In short, according to the Real Estate Report 2016 (FGH), there is a high probability that the vacancy in the existing supply of offices, shops, commercial spaces and social real estate will be permanent. It is therefore about real estate entrepreneurship. National control over the total vacancy is desirable. Long-term trends and developments per real estate sector are for:

- **Offices market:** In the long term, there is supply reduction and greening of the (existing) supply needed to improve the value perspective. The demand for offices will go up, the supply will go down due to withdrawal from the market and more office investments (NVM 2017a).
- **Retail market:** Total retail usage shrinks in the longer term (2025) by possibly 25%. Retail locations with unique qualities and a high service area become more attractive as an investment with good prospects (NVM 2017b, Dynamis 2016a).
- **Commercial space market:** An increasing demand for commercial space in logistics and modern production. Usage (and service life) of commercial space becomes more flexible; the average service life decreases and thus the payback time (Dynamis 2016).
- **Rental housing market:** The value perspective of rental housing is favourable in the short and medium term, due to more demand than supply with prospects for the middle segment (PBC 2017). There is no bubble in the housing market in the big cities at this time. Due to the overheating (1) in the big cities, families mainly relocate to neighbouring municipalities looking for affordable homes. The housing market then accelerates there (2). People in the rest of the country move away. The housing market there remains in a slump (3) (The Nederlandse Bank 2017).
- **Investment real estate market:** Differences between initial returns for good-quality property and other real estate continue to increase. Expectations are that the investment market will now be more successful and will remain dynamic (NVM 2017c).
- **Real estate financing market:** Banks are increasingly the financial director between real estate investors and investors. There seems to be momentum for further expansion of the real estate financing portfolio (Syntrus Achmea 2017).
- **Logistics real estate market: The research of Savills** (Oers, D. van, N. Poppelaars and J. Jansen 2017) gives **three key trends that will be determinative in 2017 for the logistics real estate market:** (1) the extent of new logistics developments continues to increase. Ten years ago, an average new development was 16,900 m<sup>2</sup>; now it is over 28,850 m<sup>2</sup>. The demand for new distribution centres is not yet declining, and Savills also expects more of such XL developments in 2017, (2) **the growth of e-commerce**. Online spending grew by 18.7% in 2016 compared with the previous year. In order to be able to further facilitate this growth, the *supply chain* must be modernized and optimized, (3) **political and economic uncertainty**.
- **Social real estate market:** The Barometer for Social Real Estate 2017 (Veuger et al. 2017) gives clear insights into future issues regarding social property.
- **Real estate and Blockchain internationally: first pilots and in silence**
- The Cadastre is currently exploring internationally the possibilities of Blockchain, where various movements can be observed. Some countries like Georgia and Sweden are actually testing with Blockchain. Estonia and Dubai are also running pilots, but doing so in silence. Countries like Ghana, Georgia (US) and Brazil have different ideas, but have not (yet) worked these out (Vos 2017). The Bitfury Group is currently working on a number of studies in



Georgia (US). The government in Honduras has started a project to register land that has not yet led to results and publications and recently stopped (Drucker 2106). Within the Cadastre, an international expert team is working on further exploration. In conclusion, Vos (2017) states that Blockchain is not yet proven in practice internationally and that completeness and transparency are the conditions for being able to make Blockchain a success.

In Sweden (Salmeling and Fransson 2017) a test environment has been built as part of *The Land Registry project in the Blockchain* to understand Blockchain's technology, processes and security issues that need to be considered and given legal form. The Blockchain tested here for real estate is implemented by a group of public and private entities. In this test environment, it has been found that six features are important for a safe process (Salmeling and Fransson 2017: 4-5). The next steps they will take concern the technical environment, technology and process integration, more partners and projects, legal conditions and lobbying, ownership and control. The value of possible Blockchain solutions for real estate lie mainly in a more effective and more efficient method of transactions, a better foundation for better investment and new development for the mortgage market. All this will then grow into more trust in fundamental parts of an economy: land and real estate.

### **Real estate and Blockchain nationally: digital solutions**

On the national level, there are a number of Blockchain pilots with real estate: (1) open data from the Cadastre, (2) government-wide pilot on the possibilities for processes and (3) a pilot by the Living Environment and Transportation Inspectorate (ILT). For the government-wide pilots, primarily the processes of real estate, aviation and ships are being investigated, in which the process of registration of ships in the Blockchain is now being investigated (Vos 2017).

In the Netherlands, Blandlord crowd ownership has been introduced and is utilizing Blockchain. The ownership of the real estate is then divided between a number of owners and fits into the philosophy of a sharing economy: a group of equals collectively takes responsibility for the property without debt or mortgages. No public information is available yet about the results to date.

Deloitte (2017)<sup>ii</sup> explored eight trends that will have a major impact on the real estate industry. In random order:

- **Cyber risk:** smart buildings are increasingly an important competitive advantage and can even generate new revenue. However, the emergence of these 'smart buildings' also brings along points of attention, including cyber risks.
- **Crowdsourcing:** crowdsourcing is on the rise. More and more companies are seeing opportunities in utilizing the knowledge, expertise or creativity of a large group of people online. This method allows for a more flexible workforce and, consequently, a flexible shell of office space.
- **Smart mobility:** when travellers can use their travel time fully productively, for example with self-driving cars, what will this mean for housing prices, for example? This is now often based on location, but what if location does not matter?
- **Future of work:** the changing jobs are not only coming from organizations; employees also have different expectations of their employer.
- **Blockchain 2.0:** Blockchain offers enormous opportunities, and the real estate industry is increasingly experimenting with this distributed trust.
- **Standardization:** we expect more collaboration in the future on sharing and exchanging data. These data partnerships offer a lot of added value.
- **Ports:** Three major topics will (have to) receive a lot of attention from the maritime sector in the coming period: smart ports, increasing cooperation between seaports, new niches (at the expense of fossil fuels).
- **Smart cities:** increasingly, digital technologies will be used to solve urban challenges.

### **Conclusion: Trust in a viable real estate economy**

The way in which disruption, Blockchain and real estate will develop in the coming years are not the only obvious characteristics of a particular era, but also its social impact and user behaviour. This also applies to how this real estate transition can best be tracked, guided and utilized in society at the

international, national and regional level. Disruptive organizations clearly respond to the viability of the (built) environment and therefore determine competitive strength. This affects the current and future valuation of real estate. The value of the possible applications of Blockchain in real estate processes is reflected in more effective and efficient transactions, increasing transparency, a better foundation for investment and new development for the mortgage market. All of this will then grow into more trust in fundamental elements of an economy: land and real estate and from the 'internet of things' to an 'economy of things'.

Looking at the impact of Blockchain on real estate, we can draw a number of conclusions. First of all, the relationship between Blockchain and real estate has not yet been proven in practice. It is expected to develop further in the form of registering transaction processes and the DNA passport of a real estate object. Secondly, completeness and transparency are the basic ingredients for trust in the system. Third, real estate wants to remain viable. For this reason, taking the offense is necessary for real estate and management to connect with social demand. Behaviour also leads to new earnings models of the social and economic spin-off of disruptive real estate. If the Dutch real estate sector embraces Blockchain and is able to realize innovations, then there are opportunities for real estate entrepreneurs to exploit the disruptive character to provide those new services.

Artificial intelligence through algorithmizing of Blockchain will increasingly play a role in the taking of decisions by learning organizations. It is good to realize that (thinking) processes and decisions are being outsourced by algorithms. This artificial intelligence cannot combine hard and soft factors to make considerations. The question is whether we will use the big-data models correctly and not inadvertently bring about inequality, discrimination and less vigilance. That technology develops faster than the adaptability of people is also not new: the parachute was invented only after the first plane flew. Ethics for individuals and organizations remain important for judging and utilizing data.

Changes in value concepts affect the valuation of real estate and the thinking about it. The orientation of changing users and owners of real estate affects innovativeness, values and flexibility in managing that property. Orientation on disruption must be seen as proof that the real estate world is able to actually innovate the accumulated assets and consolidate this. The financial and real estate markets are markets that exaggerate through irrational behaviour. Fear of 'eat or be eaten' determines people's behaviour. Financial and thus real estate markets are always unstable and must always be regulated by people and organizations.

The question that remains is whether it is important to look at disruptive innovations in existing markets or newcomers in the real estate market and Blockchain. The question is whether Blockchain is only a technological disruption, or a real game changer, and whether the entire value chain of the real estate market will embrace it. No two disruptions are the same. Trust in Blockchain is a prerequisite for guiding the predictable form of that disruption where start-up companies use new technology to offer cheaper and inferior alternatives to real estate in the market. You could also talk about anti-fragile value: *'Some things benefit from shocks; they thrive and grow when exposed to volatility, randomness, disorder, and stressors and love adventure, risk, and uncertainty. Yet, in spite of the ubiquity of the phenomenon, there is no word for the exact opposite of fragile. Let us call it antifragile.'* (Taleb 2012), in other words: attention to disruption and Blockchain creates a viable real estate economy.

The true meaning of the Blockchain technology for real estate still needs to be investigated. I am still curious to understand and clarify the value of Blockchain for real estate processes. Doubt continues to exist and is therefore a feeding ground for further research, because we do not know what we have not seen.

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## Logistic system balancing of servicing home-care in urban areas and surrounding villages

David Bogataj<sup>1</sup>, Alenka Temeljotov Salaj<sup>2</sup>, Marija Bogataj<sup>3</sup>, Samo Drobne<sup>4</sup>

<sup>1</sup>University of Padua, Department of Management and Engineering; [David.Bogataj@unipd.it](mailto:David.Bogataj@unipd.it)

<sup>2</sup>Norwegian University of Science and Technology

<sup>3</sup>CERRISK-INRISK

<sup>4</sup>University of Ljubljana, FGG

### Abstract

Home care is supportive care provided in the home, mainly offered by licensed healthcare professionals who provide medical treatment needs or by professional caregivers who provide daily assistance to ensure the activities of daily living and hospice care. For these purposes, Europe is developing new long-term care systems which include the ideas of deinstitutionalization, where provisions of services are changing the place from an institutional environment to homes of patients. New facilities like assistance centers, day-care centers, and intergenerational facilities are fast developing as new facilities in community services or more dispersed facilities for 24 hours care in the urban and rural areas. After the study of time, available for servicing, spatial dispersion of facilities and homes of older people who are included in a home-care, such system of health and social services needs to undergo some balancing of activities for optimal allocation of nurses to the supply network. When technology is changing rapidly, like availability of smart phones, websites and tablets and different other ways of telecare, the services can be provided in a more effective way, and higher agility is required. At the same time the number of clients is increasing, and therefore the system should dynamically adapt to the new requirements. Therefore, the computer assisting models for optimal logistics and facility dispersions should be developed. The spatial dispersion of housing should be particularly considered in the planning of the built environment and other new facilities for seniors. Namely, logistic costs per capita are increasing by increasing the dispersion, while there is decreasing the density of homes in the functional regions where services are provided. Feasible scheduling and optimal routing are essential for an acceptable trade-off between logistic costs and satisfaction of clients. In our study, we optimize the home healthcare routing and scheduling to balance the necessary workforce and service time requirements at given clustering of homes in the given functional region. The model is based on the ideas of solving the nonlinear balancing problem developed in industrial engineering for line balancing, also known as assembly line nonlinear balancing problem. A mathematical method for line balancing is formalized on the basic idea of the Patterson-Albracht algorithm, where the nonlinear problem is linearized to be able to formalize it as a linear programming problem. Here fixed cycle time is relaxed; the operation time is an integer deterministic value. The method for evaluation of the precedence diagram is studied additionally while other balancing procedures follow the similar phases as at Patterson-Albracht algorithm used in industrial engineering for line balancing. This mathematical programming tool enables us to study the outputs of various scenarios very rapidly; therefore it might help professionals to be prepared in advance for the coming changes caused by the growing number of seniors and changes of technologies.

**Keywords:** Long-Term Care logistics, Urban networks, Facilities, Patterson – Albracht algorithm, Nonlinear line balancing.



## 1. Introduction

### 1.1 Problem identification and the scientific background

In 90's it has increasingly been recognized that housing and other social infrastructure and services for older adults should also play an important role in community care and innovations in industrial engineering. This has been apparent in official guidance and statements, in some of the more innovative forms of community care provision, and in rear cases of academic literature. Until the last decade, a critical view of the meaning and potential role of housing in community care has remained largely absent from the scientific debate. Ageing of the population requires certain dynamics in the development of the age-friendly environment. The built environment should be better adapted to the ageing population.

In the next 45 year, 30% of the built environment will need to be modified for the use of people with declining functional capacities. These dynamics will pressure the public finances for investment in assisted living facilities, hospitals for servicing old adults with declining functional capacities and other public buildings, as well as family savings. The Ageing Report 2015 (European Commission, 2015a, 2015b), is providing the basis for the projections of the needed structure of social infrastructure in the European countries. Housing is a potential source of both material and environmental well-being also for seniors (Costa-Font, 2013; Rossi and Weber, 1996; Rohe et al., 2001; Ronald, and Doling, J. (2012)).

According to INSEE ([www.insee.fr](http://www.insee.fr)), more than 70% of senior citizens aged 60–80 live in owner-occupied housing. In the countries with low pension income, like Spain and other Southern, some Central-European and Eastern EU countries, this homeownership rate is over 80 and has been increasing in the recent 40 years substantially. It means that older cohorts are income poor and asset rich, but there are not developed mechanisms to adopt their homes to their declining functional capacities. Many older inhabitants will stay in their homes as long as possible. To support European directions towards the deinstitutionalization and to enable stay in old citizens' homes as long as possible the networks of facilities for older persons and services for them should be better developed and optimised regarding wishes of seniors and costs of services. For this purpose, the optimization methods on graphs should be developed for these services. To balancing the activities on these graphs, the methods, similar as a balancing of production lines are suggested. Therefore we will examine to what extension the mathematical model for line balancing introduced by Patterson and Albrecht (1975) could be used in this mathematical formulation and optimization procedures and how it should be modified.

### 1.2 Critical examination

Our research has critically examined the emergence and development of the idea of housing as an basic indicator of acceptable and not too expensive community care, identifying the reasons why the housing dimension has risen from a seriously marginalized position to the central role for people with declining functional capacities as an important factor for the independent movement of the elderly, his dignity and self-esteem, but also influencing logistic costs (Bogataj and Dobbs, 2015). A fundamental shift in thinking is still required at many levels. Recently, the community care users have consistently claimed that housing accessibility criteria and dispersion in the functional region of servicing old people are the first essential components of effective community care (Black and Dobbs, 2013; Pacione, 2012). The needs in the community care process to initiate and develop a housing approach to community care, in which housing is recognised as the vital component, should be examined carefully. As presented in Scottish Geographical Journal by Pacione (2012), retirement villages are one of good option to concentrate services and therefore we have considered this option in details embedded in the multistate transition model of housing needs (Bogataj et al, 2016), because costs of logistics are much lower than logistics in case of dispersed homes of owners. Therefore we shall present the model by which we can evaluate how the dispersion of clients in the functional region of an LTC center influence costs of services and show how to support the decision to finance a more

concentrated retirement villages or to serve the people highly dispersed in a functional area. In the model, we will try to allocate the activities to the nurses so that their working time in the prescribed time window will be more balanced.

### 1.3 Planning the home-care and housing needs for older citizens

Long-term care (LTC) is a range of services required by persons with a reduced degree of functional capacity, physical or cognitive, and who are consequently dependent for an extended period of time on help with basic activities of daily living (ADL), such as bathing, dressing, eating, getting in and out of bed or chair, moving around and using the bathroom. This is frequently provided in combination with basic medical services such as help with a wound dressing, pain management, medication, health monitoring, prevention, rehabilitation or services of palliative care. LTC services also include lower-level care related to help with instrumental activities of daily living (IADL), such as help with housework, meals, shopping, and transportation. LTC can be received in institutions or at home" (Source: OECD Health Data 2008), but home care can be in more or less dispersed housing units of seniors. Therefore the cost of these activities depends on dispersion and accessibility of the built environment. In Slovenia as in many European countries, the clients are dispersed in smaller villages dispersed around the central place of the functional region. The paper will provide a new method to determine the costs of more or less dispersed villages of clients in the functional region of a central place, where the care center is located. Thus, the method is also important for local authorities, social care, and spatial planners to study elderly people's logistics, other care and housing needs. The method will support decisions regarding physical improvements of elder-care networks and its infrastructure, depending on housing and villages, dispersion in the supply areas, showing that logistics and other services are dependent on the dispersion of activities in a functional region. The model will base on the requirements that

- working time of all nurses and other service providers should be balanced,
- the timing of services in all area should be close to the desired time of service, reported by users and
- costs should be minimised.

For this reason, network optimization model will be combined by the line balancing algorithm of Patterson and Albrecht (1975).

## 2 The Model

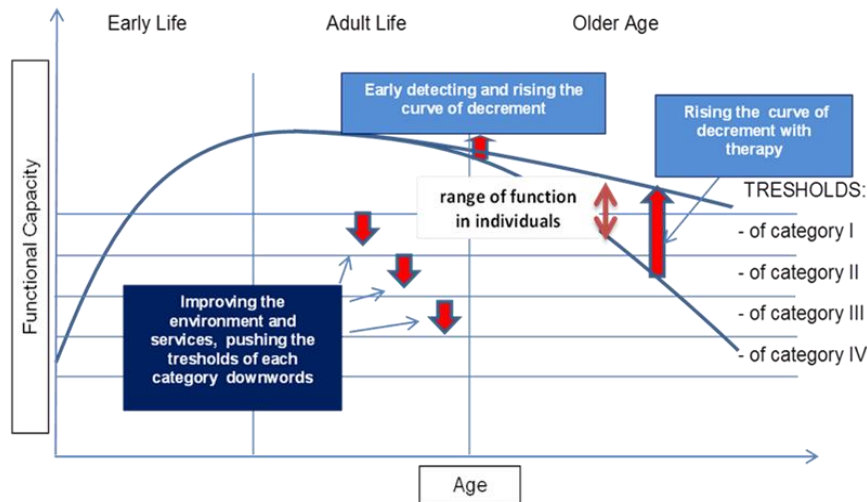
### 2.1 The dispersion of villages in the functional region

We are assuming that in the network we have  $n$  villages ( $i, j = A, B, \dots$ ) with clients, whose functional capacities are in one of 4 categories of care ( $k=I-IV$ ). For each category there is prescribed a time of care  $\tau_k$ , which is:

$$\begin{aligned} & \frac{1}{2} \text{ of hour for category I,} \\ & 1 \text{ hour for category II,} \\ & 1.5 \text{ hours for category 3 and 2 hours for category III} \\ & \text{and 2 hours for category IV.} \end{aligned}$$

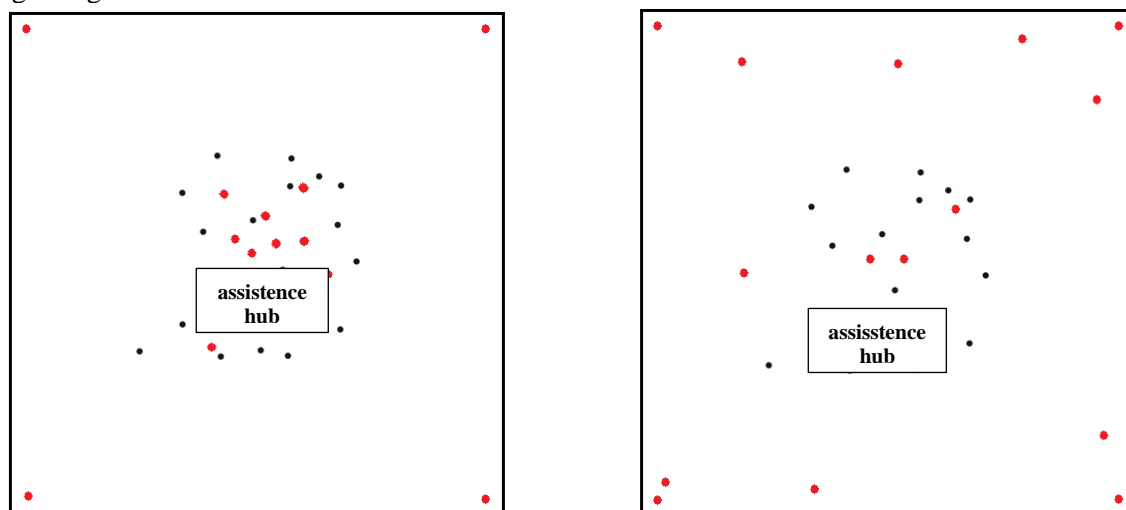
so that total time spent in one of the villages  $i$  is the sum of cares through all  $s = 1, 2, \dots, S$  persons who need the LTC services. Each client has his preferences when he would like to be served. Let us take the morning program, lasting 5 hours from 7AM till AM. Therefore their preference could be to start the services: at 7AM, at 8 AM..., at 12 AM. The decline from this preferred time is evaluated as  $\delta_i = \sum_{s=1}^{S_i} \delta_{s,i}$  and is subject of the optimization procedure. The preferred average starting time of servicing started at each village is determined  $T_i$  and is subject of the Patterson and Albrecht (1975) optimization procedure.





**Figure 1: Declining functional capacities. The environmental characteristics influence required the time of services for each category of care.**

Knowing a certain dispersion of villages or other service areas – spatial units (districts in the central place of region where servicing centre is constructed or in other towns which area is divided into more units) in which the distances between a pair of clients is much lower than distance between these villages and other spatial units, we can calculate the road distance and from it the time distance between pair of villages or other spatial units of LTC. In our paper, the villages and other service areas are named “spatial units”, denoted by  $i = A, B, C \dots$ . The number of clients in these villages gives us the data of time needed to communicate between the clients in the village and data of time needed for servicing the clients are determined according to their categorisation of care regarding the care dependency scale (CDS). Regarding this categorisation the, care could be only in the morning or afternoon, or twice per day. We shall optimize each of these two cycles separately. The clients are reporting when they prefer the services and, therefore we get quality factor for each service area regarding the time window of service. It is not always able to satisfy the exact time of service regarding the wishes of clients.



**Figure 2: Dispersion of LTC activities in lower dispersion (left) and higher (right) dispersion of villages around the central place where LTC central unit is located**

## 2.2 Multiple Travelling Salesman Problem

We use the Multiple Travelling Salesman Problem (mTSP) approach so that every village would be visited once along the shortest possible route regarding service preferences of older adults in LTC.

The multiple Travelling Salesman Problem (mTSP) was modified and formalised as described in Bektas (Bektas). The procedure was used to find the shortest route of visiting the villages. Equations (1–3) describe the assignment part, complemented with the sub-tour elimination constraint (4) based on the Miller–Tucker–Zemlin (MTZ) formulation (Miller et al., 1960).

The integer programming for the mTSP problem is described in the below formulations.

Consider a graph  $G = (A, L)$  where  $A$  is the set of  $n$  nodes ( $i, j = A, B, C, \dots$ ), presenting  $n$  villages in LTC of the assistance hub, known by geocodes on the map, and  $L$  is the set of edges ( $l_{i,j} \in L$ ), marked on the roads of map between all possible pairs ( $i, j$ ) of nodes, on which the minimum values of time spent by travelling in-between  $c_{i,j}$  are known. Therefore to each pair of nodes ( $i, j$ ) the shortest edge  $l_{i,j} \in L$  is defined and evaluated by the travel time  $c_{i,j}$ . Each nurse moves between the patients' homes inside the nodes, starting and returning to the assistance hub. The working day of nurses consists of 7aM to 12AM time window. travelling on the way that the preference of clients when to be served are as close as possible and each village is served only with one nurse and only ones per day.

The objective sub- function (1) is to minimize the total number of nurses at the constraint (2)–(6), where the duration of routes  $c(k)$  equal to or smaller than nurses' morning workload (5 hours). The route of nurse  $k$  is the sum of time distances between villages ( $c_{ij}$ ) and prescribed care time in the village  $j$  ( $t_j$ ) plus the outbound and inbound travel time from/to the hub:

$$\text{Minimize } m \quad (1)$$

$$c(k) = \sum_{j=0}^n \left( \sum_{i=0}^n c_{ij} x_{ijk(T)} + x_{ijk(T)} t_{jk} \right) + c_{i0k} x_{ijk(T)} \leq 5 * 60 \quad (2)$$

$$k = 1, 2 \dots m$$

$$x_{ijk} = 0, 1$$

$$c_{ij} = s_{ij} * d_{ij}$$

Variable  $x_{ijk}$  equals 1 if the  $k^{\text{th}}$  nurse goes immediately from  $i$  to  $j$ , and 0 otherwise.  $d_{ij}$  is the shortest distance between  $i$  and  $j$  by roads and  $s_{ij}$  is the optimal speed that is possible to reach on the given road. All  $m$  nurses start their daily circular route at the municipal nursing home CCE denoted by the node 0 and they return to the same location after less than 8 hours of their work, after visiting the last patient.

Equations (3) and (4) were added to the traditional TSP formulation, to ensure that exactly  $m$  nurses depart from and return to the CCE. The nurse has to leave location  $i$  after the care tasks are performed, and goes on to only one location  $j$  out of the remaining locations, as described by (5).

$$\sum_{k=1}^m \sum_{j=1}^n x_{0jk(T)} = m \quad (3)$$

$$\sum_{k=1}^m \sum_{i=1}^n x_{i0k} = m \quad (4)$$

$$\sum_{j=1}^n x_{ijk} = 1 \quad \forall i \quad \forall k \quad (5)$$

$$\sum_{i=1}^n x_{ijk} = 1 \quad \forall j \quad \forall k \quad (6)$$

Equation (6) requires that if the nurse is at a particular location at a given moment, the nurse could have come from only one of the previous locations to the present location. The sub-tour elimination constraint (7) is a vital part of the TSP formulation; it is included to have only one tour, a Hamiltonian circuit for each nurse, covering all locations to which the nurse get allocates, instead of two or more separate tours adding up to cover all sites. Therefore “dummy” variables  $u_i$  are introduced, which represent the sequence in which location  $i$  is visited, while values of  $u_i$  are arbitrary real numbers and,  $p$  denotes the maximum number of nodes visited by any nurse (Bektas, 2006).

$$\begin{aligned} u_i - u_j + px_{ijk(T)} &\leq p - 1 & u_s &\geq 0; \quad s = i, j \\ x_{ijk} &= 0, 1 & i &= 0 \dots n - 1 \\ & & j &= 1 \dots n \\ & & \forall k; \quad k &= 1, 2, \dots, m \end{aligned} \quad (7)$$

The list of addresses and the corresponding time requirement of care activities were registered by the CCE.

### 2.3 Patterson – Albracht algorithm to improve the desired service time

The following mathematical formulation is based on the Patterson and Albracht algorithm (1975), and considers the following assumptions in the production processes, which will now be considered for servicing old people:

- Single-product assembly line – here the single functional region of home care LTC with one hub.
- Fixed cycle time – her fixed planned cycle time of care from 7aM till 12AM.
- Deterministic and integral operation times – here the same
- No assignment restrictions besides the precedence constraints – you cannot choose which nurse serve which client, but the preference matrix regarding when to serve is subject to optimization procedure
- Serial line layout – rout of services on the graph
- All stations are equally equipped – all nurses are equally trained and equipped (the same capacities to serve a client.

Generally, starting time from the data regarding the tasks, the precedence diagram calculated from the average time determined by clients and the balancing procedure follows these phases:

1. determination of cycle time ( $c$ )
2. determine the number of nurses ( $m$ )

3. identification of earliest and latest activity (here to the hub)
4. definition of constraints
5. optimization of solution

In step 1, the determination of cycle time is very simple, here  $5 * 60 = 300$  minutes

$$c = 300 \text{ minutes} \quad (8)$$

Step 2: Next we have to determine the number of nurses, the theoretical value  $m^*$  is calculated as the ratio between the total time to serve all clients  $t_j = \sum_{s(j)} t_{j,s}$  plus the total travel time determined in the first procedure plus given prolongation from the optimal travel time without preferences  $c(k)_{max} + \omega$  when to serve and the cycle time:

$$m^* = \frac{\sum_j t_j + c(k)_{max} + \omega}{c} \quad (9)$$

Minimum chosen  $\omega$  in which the solution with Patterson-Albrecht sequences exists is the value which goes to further procedure. We are simulating  $\omega$  value and add the costs of  $C(\omega) * \omega$  to the criterion function.

Usually, the next higher integer is chosen to define the real number of nurses  $m$ , but in some cases it could be higher, mainly due to the travel and operation time and precedence diagram.

In step 3, the precedence relations are used to restrict the number of activities to which a task can be assigned, delimited by the earliest activity  $E_j$  and the latest activity (serving a village)  $L_j$  using the following equations

$$E_j = \left\lceil \frac{(t_j + \sum_{h \in P_j^*} t_h)}{c} \right\rceil \quad (10)$$

$$L_j = m + 1 - \left\lceil \frac{(t_j + \sum_{h \in F_j^*} t_h)}{c} \right\rceil \quad (11)$$

The final criterion function is

$$\min[C_{nu} * m * 5 + C(\omega) + \sum_{j=1}^n C_{d,j} \delta_j] \quad (12)$$

Where  $C_{nu}$  is workload cost of 1 hour of servicing and travel of all involved nurses and  $C_{d,j}$  is cost of evaluation of delays in each village separately and  $C(\omega)$  is cost of additional time needed for relaxation which enable to adopt the service time to wishes of seniors it means to include the preference matrix to the algorithm procedure.

### 3 Discussion and conclusion

The optimization of routing and servicing of older adults in home care LTC can help to reduce the cost of servicing and increase the satisfaction of seniors regarding when to be served (in our case it is measured in delays of servicing and the number of nurses employed). Connected to the delivered care – admittedly it also depends on the means of transport they use and the spatial dispersion of villages, where LTC should be executed. In this paper, we presented how Patterson –Albracht algorithm embedded in mTSP can be included to consider also the best time to be served regarding wishes of older persons. On this way, the trade-off between this quality measure and number of needed nurses can be studied. The relaxation procedure adding  $\omega$  is discrete, and the length of units helps us to get more precise or less precise solutions.

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## **Housing Equity Withdrawal in the Portfolio Choice for Financing the Long-Term Care Facilities**

Valerija Rogelj

Faculty of Organizational Studies, Novo mesto, Slovenia

David Bogataj

University of Padua, Italy and Technical University of Cartagena, Spain

Marija Bogataj

CERRISK-INRISK

marija.bogataj@guest.arnes.si

### **Abstract**

Across the European Union, currently, 40 million older people are dependent on the help from others (EC, 2015a). This number will rise to 55 million until 2060. More than 4 million of dependent old people live in segregated residential institutions which cannot ensure person-centered services to bring about full inclusion of seniors to the community. This number will more than double till 2060 even in the case that we shall develop more proper facilities. Human dignity and the respect for human rights guide the European Member States to implement adequate reforms of long-term care systems (LTC). Following the provisions of the UN Convention on the Rights of Persons with Disabilities and the European Convention on Human Rights (EC, 2017), we should implement measures reinforcing the transition from institutional to community-based services. The process is named Deinstitutionalisation. It requires to build new facilities for seniors and to remodel their homes adapting for the persons with declining functional capacities. We have to develop sufficient number of the following care facilities: (a) Independent Living Communities, (b) Assisted Living Facilities, (c) Residential Care Facilities, (d) Continuing Care Communities and (e) Nursing Homes, to provide required assistance and care for persons who are dependent on help of others and their functional capacities are declining. For the different level of functional capacity of seniors, different facilities are needed. We have calculated how much it will cost and what would be the possible financial sources to cover these expenses, on the basis of the National Health Institute database. In our study, we developed the model of adaptation of different facilities to the functional decline and wishes of seniors and calculated the needed monthly premiums which are payable for 40 years, from age 25 to 64 to cover expenditures for the long-term social care in a properly built environment. We have combined these financial sources with potential Housing Equity Withdrawal (HEW) from homes of seniors who are owners of their home. Therefore, in this article Equity Release Schemes have been studied in the context of the Long-term Care Insurance and behaviour of the urban land rent. We have compared the insurance schemes based on HEW and insurance schemes with monthly premiums from their gross salary. ERS could transform fixed assets in owner's occupied dwellings into liquid assets for LTC including proper facilities. We have shown how the interest rate variation, which can reduce the income of older persons even below the targeted quality of LTC, has a significantly smaller impact on welfare of the elderly if these sources, which depend on a volatile interest rate and which have a positive covariance with the interest rate, are combined with the ERS loan model based on the old persons previous housing or home in the community villages, adapted for seniors, where the correlation coefficient is negative. Because of the volatility of the interest rate the proper combination of annuities paid from their gross salary and dynamics of ERS drawings from senior's housing units has to be planned to decrease the volatility of combined cash flows deriving from both pillars. Therefore, it is wise making a trade-off between these two schemes. The calculation based on the data of average value of a home owned by seniors and the costs of LTC consisting of the average costs of care in each of four categories of LTC, where the facilities are adapting to these categories are giving the optimal portfolio for LTC in proper built environment in Slovenia. The numerical example is based on the German Mortality Tables DAV1994R, as required by Slovenian Agency for Insurance Supervision.

**Keywords:** Long-term-care facilities • housing for seniors • built environment • urban land rent • reverse mortgage • portfolio optimization.



## 1. Introduction

In Europe, the number of people aged 65 and older is about to grow from 85 million today to more than 151 million in 2060 (EC, 2015a). Life expectancy is increasing but expected healthy years are not following an increase in life expectancy (EC, 2014). How to provide quality services, housing for increasing number of people that are dependent on the help of others, and proper other facilities in their friendly built environment is a major question in the EU. In accordance with the »Operational Program for the implementation of the European Cohesion Policy for the period 2014–2020« (EC, 2014), as a key area Slovenia identified Promoting the availability of affordable, sustainable and high-quality services, including health and social services of general interest also for old and very old inhabitants. These services include the long-term care (LTC) in a proper built environment. National housing program 2015 – 2025 (MOP, 2015) envisioned development of 10.000 assisted-living housing units in Slovenia. In the paper we present a model for financing the development of assisted – living housing units with current housing equity of senior homeowners which are dependent on the help of others. The key issue which until now has not been answered is how to develop a quantitative model for measuring and forecasting long term demand for LTC services and facilities for the elderly, and how to plan the assisted living facilities for seniors with declining functional capacities, which will be available in accordance with the demand. As stated in the Operational Program 2014–2020, Slovenia does not have a comprehensive system for regulation of LTC. Services and rights are arising from the different existing systems - health, pension and disability insurance as well as from the social welfare system. Given the demographic structure and projections developed by European Commission and presented in The Ageing Report 2015 (EC, 2015), there is a need for reform that will enable the establishment of a uniform system of high-quality community-based services for ageing in community including home care, supported housing in assisted living facilities and nursing homes for those that will need institutional forms of care. Slovenia is preparing new legislation in the field of LTC, which will have to take into consideration also a different type of facilities where LTC services will be provided. This will require the development of a model for projections of needs and capacities for integrated health and social services for persons depend on the help of others in the community setting and in institutions. Recording LTC services of recipients of services and funds for LTC, and coordinating the development of integrated community-based services, as required in Operational Program 2014–2020. In the paper, we shall develop a model forecasting the demand for LTC services and facilities, for which even the documents of European Commission (2014) state that has not yet been developed and show how the optimal policy requires higher dynamics of providing facilities for seniors. A more objective measuring instrument, based on the actuarial-mathematical methods will be presented. LTC insurance model will be developed and embedded in reverse mortgage financial instrument. Thus, the objective of the paper is to present how to develop an actuarial model for determining the capacities for care in different types of facilities in the system of LTC. The paper also presents the proposal for a model of collecting and processing data in the system of statistical reports relevant for the whole country, to better forecast the long-term needs of seniors with declining functional capacities.

## 2. Facilities for persons with declining functional capacities

UK research (Wood, 2017) has shown that residents living in assisted-living facilities:

1. visit general practitioner (GP) less frequently;
2. have much shorter average hospital stays;
3. the much lower probability of falls and hip fracture, and;
4. a lower percentage of them suffers from loneliness.

This has been apparent from several studies (Berington, 2017; Fiel et al., 2002) and is influencing the development of housing policy in the UK as reflected in official inquiry of Work and Pension Committee, (UK Parliament, 2017). Until the last decade, a critical view of the meaning and potential role of housing in community care has remained largely absent from the scientific debate. Ageing of the population requires certain dynamics in the development of age friendly environment. As Debra

Dobbs pointed out in her research developed in University of South Florida, School of Ageing Studies (Black & Dobbs, 2014, 2015), the consequences of societal aging will impact all domains of life and the broader infrastructure in which persons of all ages interact. And we can agree with her that like in USA also in Europe recent evidence suggests that communities are woefully underprepared to respond to this challenge. The built environment should be better adapted to the ageing population. Feeling secure in one's living environment strongly affects people's willingness to move about in the local community, which influences their independence, physical health, social integration and emotional well-being (Kalache, Plouffe, et al., 2007). In the next 45 years, 30% of the built environment will need to be modified for the use of people with declining functional capacities. These dynamics will pressure the public finances for investment in assisted living facilities, hospitals for servicing seniors and other public buildings. The Ageing Report 2015 (EC, 2015) is providing the basis for the projections of the needed structure of assisted living facilities in the European countries. Housing is a potential source of both material and environmental well-being (Costa-Font, 2013; Demirkan, Olguntuerk, 2014). According to research done by INSEE ([www.insee.fr](http://www.insee.fr)), more than 70% of senior citizens aged 60–80 live in owner-occupied housing. In the countries with low pension income, like Slovenia, Croatia, Spain and other Southern and Eastern EU countries, this home-ownership rate among senior citizens is over 80 and has been increasing in the recent 40 years substantially. It means that many seniors are income poor and asset rich. The problem is that there are not developed flexible financial mechanisms to tap this accumulated housing wealth and use it to adapt their homes to their declining functional capacities and also allow move to assisted – living facilities when the decline in functional capacities of homeowner requires it.

Most of the senior residents would like to age in the community. Research in Slovenia has shown that most of senior homeowners understand that they will not be able to stay in their own home due to declining functional capacities and would prefer to move to assisted living facilities instead to nursing home (Kavšek, Bogataj, 2016). Using actuarial mathematics and the life contingencies, the paper will present how reverse mortgage systems with the embedded insurance for longevity and LTC might allow residents with declining functional capacities to stay in the community longer and delay or even prevent moving to the nursing home.

### 3. Development of statistical research in the field of long-term care

Statistical monitoring of the number of beneficiaries and the financing of long-term care is a key base for an efficient and effective planning of spatial capacities and necessary human resources for carrying out long-term care activities. Therefore, after examining the organization of long-term care across the EU Member States, we selected the Kingdom of Spain as a useful example how comprehensive information system for recording LTC should be organized.

The care of the elderly in Spain is legally defined under the auspices of the Ministry of Health, Social Services and Equal Opportunities (Spanish *Ministerio de sanidad, servicios sociales e igualdad*) under the following laws (IMSERSO, 2016):

1. Act on the promotion of independence and care of persons dependent on the help of others (Royal Legislative Decree, 2006);
2. Royal Decree 174/2011, which sets the scale for assessing the ability of self-sufficiency or dependency on the help of others (Royal Legislative Decree, 2011);
3. Decision SSI/2371/2013, which regulates the information system for monitoring dependency (Royal Legislative Decree, 2013);
4. Act on the rights of persons with reduced functional abilities and their social inclusion (Royal Legislative Decree, 2013a);
5. Royal Decree 1050/2013, which sets a scale for assessing the ability of self-sufficiency or dependency on the help of others (Royal Legislative Decree, 2013b).



The Act on the Promotion of Personal Autonomy and Care for People Dependent on the Help of Others (2006) regulates the system of long-term care, provides a catalog of basic services and benefits to which all citizens are entitled, determines which services are directly accessible in the community and for which the beneficiary receives cash benefits, sets the criteria for determining the amount of remuneration, the level of participation of the beneficiaries in the cost of services, and sets the scale for the assessment of category (degree, level of functional capabilities of persons dependent on the help of others. The law provides a system of assistance to achieve the maximum possible autonomy and care of people which are dependent on the help of others (Bogataj, Szander, Ros McDonnell, 2015).

LTC information system should record the following data of applicants and beneficiaries:

Table 1: Following data should be recorded by LTC information system

	First application for assessment of category of care:	Further application for reassessment of category of care:
	A) Data for information and management	B) Data for the settlement of the minimum level
	<p>I. Application details:</p> <p>I.1 Identification of the applicant:</p> <p>Date of the request for recognition of the dependency situation.</p> <p>Name and surname.</p> <p>Type of identification and number (National ID card number passport, others).</p> <p>Number of the individual health card.</p> <p>Home address of the applicant.</p> <p>Birthdate of the applicant.</p> <p>Gender of the applicant.</p> <p>Indicate whether the beneficiary lives alone or not.</p> <p>Condition of returned emigrant.</p> <p>If you are being served by social services indicate the type of service included in the catalog. Are you being cared for by a family caregiver?</p> <p>From what date, if you have been recognized.</p> <p>If you are a person with a disability, your degree.</p> <p>Indicate the type (voluntarily).</p> <p>If the applicant is diagnosed with a rare disease.</p>	<p>I. Application details:</p> <p>I.1 Identification of the applicant:</p> <p>Date of the request for recognition of the dependency situation.</p> <p>Name and surname.</p> <p>Type of identification and number (DNI, NIF, NIE, passport, others).</p> <p>Home address.</p> <p>Birthdate.</p> <p>Gender.</p>
	<p>II. Data of the resolution of recognition of the dependency situation:</p> <p>Third person assistance. CDS Score.</p> <p>Large disability benefit.</p> <p>Category: Degree and level of dependence</p> <p>Indication: first assessment / review.</p> <p>Indication of the use of the general table / specific table.</p> <p>Complete or block evaluation of activities, tasks and type of support in the files that have resolution of degree and resolution of degree and level of care.</p> <p>Diagnosis or diagnosis of the disease that determines the situation of dependence.</p> <p>Resources used.</p> <p>Date of resolution.</p>	<p>II. Data of the resolution of recognition of the dependency situation:</p> <p>Evaluation of activities, tasks and type of support in the files that have resolution of degree of dependence.</p> <p>Date of resolution.</p> <p>CDS application score obtained.</p> <p>Assigned category of care (Degree and level), if any, of the recognized dependency situation.</p>
		<p>III. Data of the resolution of recognition of the benefit:</p> <p>Date resolution.</p> <p>Effective date.</p> <p>III.1 Cash benefits for care in the family environment:</p> <p>Recognized amount of the benefit.</p> <p>Indication of full-time or part-time dedication of the caregiver.</p> <p>III. 1.1 Details of caregiver:</p> <p>Name and surname. Name and surname. Sex.</p> <p>Relationship.</p> <p>Birthdate.</p> <p>Type of identification and number (DNI, NIF, NIE, passport).</p> <p>Situation of coexistence with respect to the person in situation of dependence</p> <p>In the case of removal of the caregiver, data of the new caregiver</p> <p>III.2 Cash benefit of personal assistance:</p> <p>Recognized amount of the benefit.</p> <p>Indicate whether the benefit is complete or partial.</p>

	First application for assessment of category of care:	Further application for reassessment of category of care:
	A) Data for information and management	B) Data for the settlement of the minimum level
		Determine if the service is provided by collaborating entity, worker autonomous or direct contracting by the beneficiary. Gender of the assistant in the case of self-employed or direct employment.
		III.3 Financial services linked to the LTC service: Type and subtype of linked service (Same classification services). Recognized amount of the benefit. Indicate whether the benefit is complete or partial.
		III.4 Services catalog: a.) Telecare service. b.) Home help service c.) Day center service d.) Night center service e.) Specialized day center service f.) Residential care service
		Type of dwelling: (a) Own home (b) Assisted living facility (c) Retirement community (d) Nursing home (e) Other

For better support of spatial planning and more proper investments in facilities for older inhabitants also the detailed description of current housing of seniors should be included in an information system. This would allow for better planning and development of proper assisted living facilities.

In Slovenia, there is not enough capacity in nursing homes to provide for all persons that applied for nursing homes. According to different sources of data we can see that we had in Slovenia 17,783 nursing home residents older than 64 years at the end of 2016 (ZZZS, 2017), 7,100 home care users at the end of 2015 o IRRSV report (2014) and 6,417 applicants for nursing home (SSZS, 2017). From data of Slovenian national health institute (ZZZS, 2017), we have calculated the probability that person in certain cohort will be dependent on the help of others in certain category of care.

Table 2: Number of users and applications of LTC in Slovenia (age 65-100)

	Independent	Homecare users 31.12.2015	Applicants 12.9.2017	Nursing homes residents 31.12.2016	Population in Slovenia 2016
Male	151,255	1,781	1,609	4,460	157,527
Female	203,933	5,319	4,808	13,323	222,575
<b>Total</b>	<b>355,188</b>	<b>7,100</b>	<b>6,417</b>	<b>17,783</b>	<b>380,102</b>
	<b>93.4%</b>	<b>1.9%</b>	<b>1.7%</b>	<b>4.7%</b>	<b>100.0%</b>

According to the study of IRSSV (2015) there were 866 assisted living housing units in Slovenia in the year 2014 and according to the research done by authors till 2017 the number has increased to 933. Number of owner occupied assisted living housing unit is 335. According to data provided by SSZS there were 20602 beds in nursing homes in September 2017 in Slovenia. Currently capacities in assisted living facilities present less than 5% of capacities in nursing homes in Slovenia.

Currently, we have available only yearly data regarding institutional care in the nurse homes, separately by age, gender and category of nursing care from 1 to 3. We have added to this data the number of persons in home care and number applications for institutional care. We have calculated the probabilities that the senior dependent on a help of others will be in certain category of care.

Table 4: Probability that older person will be in a certain category of care in nursing home and probability that older person will be dependent on the help of others and will need care in certain category

Age	Independ- ent	Nursing home			Estimate demand for LTC		
		Dependent Cat I	Dependent Cat II	Dependent Cat III	Dependent Cat I	Dependent Cat II	Dependent Cat III
65	0,9895	0,0011	0,0004	0,0045	0,0019	0,0007	0,0079
70	0,9755	0,0034	0,0011	0,0095	0,0060	0,0019	0,0167
80	0,9092	0,0114	0,0035	0,0367	0,0200	0,0061	0,0646
90	0,5953	0,0390	0,0174	0,1735	0,0687	0,0306	0,3054
100	0,3008	0,0411	0,0228	0,3333	0,0723	0,0402	0,5867

Table 5: Category of care - State probability matrix

Age	Male population				Female population			
	Independ- ent	Dependent Cat I	Dependent Cat II	Dependent Cat III	independ- ent	Dependent Cat I	Dependent Cat II	Dependent Cat III
65	0,9885	0,0024	0,0009	0,0082	0,9924	0,0014	0,0005	0,0076
70	0,9778	0,0072	0,0027	0,0180	0,9829	0,0049	0,0012	0,0155
80	0,9415	0,0182	0,0063	0,0491	0,9192	0,0211	0,0060	0,0745
90	0,8293	0,0385	0,0162	0,1600	0,6325	0,0779	0,0349	0,3494
100	0,6840	0,0568	0,0568	0,2839	0,4046	0,0749	0,0374	0,6366

Table 6: Home care users from 1998 to 2015 in Slovenia

Year	Home care users
1998	3.909
2002	4.590
2004	4.732
2007	5.595
31. 12. 2011	6.624
31. 12. 2014	6.888
31. 12. 2015	7.100

#### 4. Model of financing LTC including facilities

##### 4.1 Actuarial model of LTC insurance

We will use the following notation:

$p_x^{LTC}$	single premium for LTC insurance for person $x$ years old;
${}_b p_{x:h}^{LTC}$	yearly premium for LTC insurance for person $x$ years old payable for $h$ years (before the period of coverage, coverage for LTC claims starts at $x+h$ years of age);
${}_c p_{x:h}^{LTC}$	yearly premium for LTC insurance for person $x$ years old payable for $h$ years (in the period of coverage, coverage starts at $x$ years of age);
$LTC\ddot{a}_x$	actuarial present value of lifetime expenditures for LTC services for person $x$ years old;
$\gamma_2$	percentage of administrative fee that insurance company charges at each payment of benefit;
$\gamma_1$	percentage of administrative fee that insurance company charges at each payment of premium;

${}_j p_x$	probability that person $x$ years old will survive $j$ years;
$p_x^{LTC(k)}$	probability that person $x$ years old is in category of care $k$ ;
$c_k$	yearly expenditure for LTC services in category of care $k$ ;
$i$	interest rate;
$v = \frac{1}{1+i}$	discounting factor where $i$ is the annual interest rate.

Insurance for covering expenditure for LTC services for a senior who is dependent on the help of others:

- 1.) Single premium for lifetime LTC insurance for person  $x$  years old:

$$P_x^{LTC} = (1 + \gamma_2) \cdot LTC\ddot{a}_x = (1 + \gamma_2) \cdot \sum_{j=0}^{100-x} {}_j p_x \cdot v^j \cdot (p_{x+j}^{LTCI} \cdot c_1 + p_{x+j}^{LTCII} \cdot c_2 + p_{x+j}^{LTCIII} \cdot c_3) \quad (1)$$

- 2.) Yearly premium for LTC insurance for person  $x$  years old where premium is payable  $h$  years – in working period:

$${}_b P_{x:h}^{LTC} = \frac{{}_h p_x \cdot v^h \cdot (1 + \gamma_2) \cdot LTC\ddot{a}_{x+h}}{(1 - \gamma_1) \cdot \sum_{j=0}^{h-1} {}_j p_x \cdot v^j} = \frac{{}_h p_x \cdot v^h \cdot (1 + \gamma_2) \cdot \sum_{j=0}^{100-(x+h)} {}_j p_{x+h} \cdot v^j \cdot (p_{x+h+j}^{LTCI} \cdot c_1 + p_{x+h+j}^{LTCII} \cdot c_2 + p_{x+h+j}^{LTCIII} \cdot c_3)}{(1 - \gamma_1) \cdot \sum_{j=0}^{h-1} {}_j p_x \cdot v^j} \quad (2)$$

- 3.) Yearly premium for LTC insurance for person  $x$  years old at closing of LTC insurance contract where premium is payable  $n$  years (coverage starts at age  $x$ ) – in retirement period:

$${}_c P_{x:h}^{LTC} = \frac{(1 + \gamma_2) \cdot LTC\ddot{a}_{x+h}}{(1 - \gamma_1) \cdot \frac{v^j - 1}{v - 1}} \quad (3)$$

## 5.

#### 4.2 Numerical example of LTC insurance

Let us suppose that person dependent on the help of others needs intensity of care as presented in Table 7:

Table 7: Yearly expenditure for LTC – based on intensity and expenditure for social care

Category	Intensity of care hours per day	EUR per hour*	Amount per day EUR	Amount per month EUR	Amount per year EUR
I	0.5	16	8	240	2,880
II	1.0	16	16	480	5,760
III	1.5	16	24	720	8,640

\*Source: SSZS – Association of Social institutions (*data of Applicants and amount per day*)

We will calculate the premium for male which will cover expenditures of LTC in the category of required care for person who is dependent of help of others.

The premium  $P_{25:40}^{LTC}$  for LTC annuity with the actuarial present value  $LTCa_{65}$  in occupational scheme where contributions are paid for 40 years and benefits are paid from age 65 is, when person becomes dependent on the help of others:

- 1.) Single premium for lifetime LTC insurance for person 65 years old:

$$\begin{aligned}
 P_{65}^{LTC} &= (1 + \gamma_2) \cdot LTC\ddot{a}_{65} = \\
 &= (1 + \gamma_2) \cdot \sum_{j=0}^{100-65} {}_j p_{65} \cdot v^j \cdot (p_{65+j}^{LTCI} \cdot c_1 + p_{65+j}^{LTCII} \cdot c_2 + p_{65+j}^{LTCIII} \cdot c_3) = \\
 &= (1 + 0.05) \cdot \sum_{j=0}^{100-65} {}_j p_{65} \cdot v^j \cdot (p_{65+j}^{LTCI} \cdot 2,880 + p_{65+j}^{LTCII} \cdot 5,760 + p_{65+j}^{LTCIII} \cdot 8,640) = \\
 &= (1 + 0.05) \cdot 5,363.46 = 5,631.64
 \end{aligned}$$

- 2.) Yearly premium for LTC insurance for person 25 years old where premium is payable 40 years – in working period:

$$\begin{aligned}
 {}^b P_{25:40}^{LTC} &= \frac{{}_{40}P_{25} \cdot v^{40} \cdot (1 + \gamma_2) \cdot LTC\ddot{a}_{65}}{(1 - \gamma_1) \cdot \sum_{j=0}^{n-1} {}_j p_x \cdot v^j} = \\
 &= \frac{{}_{40}P_{25} \cdot v^{40} \cdot (1 + \gamma_2) \cdot \sum_{j=0}^{100-65} {}_j p_{65} \cdot v^j \cdot (p_{65+j}^{LTCI} \cdot c_1 + p_{65+j}^{LTCII} \cdot c_2 + p_{65+j}^{LTCIII} \cdot c_3)}{(1 - \gamma_1) \cdot \sum_{j=0}^{40-1} {}_j p_x \cdot v^j} = \\
 &= \frac{{}_{40}P_{25} \cdot v^{40} \cdot (1 + \gamma_2) \cdot \sum_{j=0}^{100-65} {}_j p_{65} \cdot v^j \cdot (p_{65+j}^{LTCI} \cdot 2,880 + p_{65+j}^{LTCII} \cdot 5,760 + p_{65+j}^{LTCIII} \cdot 8,640)}{(1 - \gamma_1) \cdot \sum_{j=0}^{40-1} {}_j p_x \cdot v^j} = \\
 &= \frac{0.45001 \cdot 0.49960 \cdot (1 + 0.05) \cdot 5,363.46}{(1 - 0.05) \cdot 28.37712} = 46.97
 \end{aligned}$$

- 3.) Yearly premium for LTC insurance for person 65 years old where premium is payable 16 years (coverage starts at age  $x$ ) – in retirement period:

$${}^cP_{65:16|}^{LTC} = \frac{(1+\gamma_2) \cdot LTC\ddot{a}_{65}}{(1-\gamma_1) \cdot \frac{v^n - 1}{v - 1}} = \frac{(1+0.05) \cdot 5,363.46}{(1-0.05) \cdot \frac{1 - \frac{1}{1.075^{16}}}{1.075 - 1}} = 420,64$$

#### 4.3 Modelling flexible reverse mortgage

In the paper, we shall develop a reverse mortgage model with embedded longevity and LTC insurance for financing LTC expenditures and optimal housing arrangement for persons with declining functional capacities.

Reverse mortgage transforms fixed assets in owner occupied dwellings into liquid assets for covering LTC and housing related costs for elderly homeowners. They thus enable a homeowner to access the wealth accumulated in the form of the home, while being able to continue to live in it. An illiquid asset becomes a source of liquidity, mainly for financing needs of persons that are dependent on the help of others. Reverse mortgage is loan that will be repaid from the sale of property mainly after the death of owner; Reverse mortgage is therefore (a) financial service; (b) source of liquidity for the future; (c) contain a strong entitlement to remain in occupation of the property; and (d) rely solely on the sale of the property for repayment/payment of the funds released to be used as a retirement income.

The holder of reverse mortgage contract can choose between different cash flows: (a) lump sum payment or (b) periodic (monthly, yearly) income, (c) cash on demand. The loan is secured by means of a mortgage on the property. Reverse mortgage contract stipulates that repayment is made from the proceeds of the sale of the property either after the death of the homeowner or when the property has become vacated for a longer time (see details on European implementations in Reifner et al., 2009).

The actuarial notation used is described in Gerber (1980). For modeling Reverse Mortgage Contract we use Lifetime annuity at the moment of closing of the reverse mortgage contract. The value of the property is used for repayment of the reverse mortgage loan.

Let us replace the standard notation used in actuarial mathematics as follows:

$a(x) = \ddot{a}_x$	actuarial notation for the present value of the lifetime annuity in the amount of 1 EUR, paid at the beginning of each year for the person that is $x$ years old - according to the mortality table;
$p(j x) = {}_jP_x$	the probability that the person that is $x$ years old will survive the next $j$ years;
$v = 1/(1+i)$	discounting factor where $i$ is the annual interest rate.

The amount of yearly disbursement of the lifetime annuity, therefore, needs to cover the interest on the principal amount taken out and the yearly annuity paid to the beneficiary of the reverse mortgage, as is presented in equation (4):

$$a(x) = \sum_{j=0}^{110-x} p(j|x) \cdot v^j = \sum_{j=0}^{110-x} p(j|x) \cdot \left( \frac{1}{1+i} \right)^j \quad (4)$$

The amount of lifetime annuity is calculated as the annuity factor multiplied by the net value of real estate, which is calculated as the value of the real estate minus the cost associated with the transaction (valuation costs, taxes, costs of sale).

We shall further use the more simple expression as annuity factor  $fr(x,i)$ , which is:

$$fr(x,i) = \frac{I}{(I + \gamma_2) \cdot a(x)} = \frac{I}{(I + \gamma_2) \cdot \sum_{j=0}^{110-x} p(j|x) \cdot \left(\frac{I}{I+i}\right)^j} \quad (5)$$

where the rate  $\gamma_2$  represents the costs associated with the disbursement of the annuity that the insurance company charges for each pay-out in the period of annuity.

The yearly amount of annuity  $R_h$  is calculated according to the value of real estate  $VRE$  and annuity factor  $fr(x,i)$ :

$$R_h = fr(x,i) \cdot (VRE - C) \quad (6)$$

Here  $C$  represents all costs associated with closing the reverse mortgage contract and with the sale of the property after the death of the beneficiary.

The reverse mortgage is a type of home loan that allows a borrower to open up a line of credit using his home as collateral. With the loan model, the beneficiary draws liquid amounts in lump-sum or/and periodically from the value of the real estate in the form of a loan secured by a mortgage on the real estate. With the part of this liquid amount that is drawn from the real estate, the beneficiary purchases deferred lifetime annuity in the form of a monthly (or yearly) premium.

The novelty in this paper is inclusion of LTC insurance that covers expenditure for care when person becomes dependent on the help of others.

In this way, the beneficiary insures his longevity so that if he lives longer than his life expectancy and LTC expenditures that is contingent on category of needed care, when he becomes dependent on the help of others, he will receive a lifetime annuity until his death. In the paper, we propose the reverse mortgage model with the insurance for longevity, where the periodic disbursement that the beneficiary receives is the difference between the amount drawn and the annuity premium for longevity insurance. In this way, if the beneficiary survives the drawing period of a reverse mortgage ( $n$  years), he receives a lifetime annuity that covers the disbursement to the beneficiary and the interest on the outstanding loan. This is a new scheme, first proposed in Bogataj (2013). Generally, loan models allow the beneficiary to draw the value of the real estate in different ways:

- in lump sum at the closing of the reverse mortgage contract;
- in the form of line of credit so that he can draw it when necessary;
- in uniform periodic amounts in the period of life expectancy.

The maximum amount of loan (*MLA*) that can be drawn from the real estate is the value of the real estate (*VRE*) minus all the costs (*C*), i.e. those associated with closing the reverse mortgage contract (*C*<sub>1</sub>) and with the sale of the property after the death of the beneficiary (*C*<sub>2</sub>):

$$MLA = VRE - C = VRE - C_1 - C_2 \quad (7)$$

A life annuity consists of a series of payments which are made while the beneficiary (of initial age *x*) lives.

The present value of the life annuity due with yearly payments at the beginning of each year in the amount of 1 EUR in next *n* years for person which is *x* years old, is denoted by  $a(x|n) = \ddot{a}_{x:n|}$  where the following equation can be written:

$$a(x|n) = \sum_{j=0}^n p(j|x) \cdot v^j \quad (8)$$

The present value of the life annuity deferred for *n* years with yearly payments in the amount of 1 EUR is denoted by  $b(x,n) = {}_n\ddot{a}_x$ , where the following equation can be written:

$$b(x,n) = p(x|n) \cdot v^n \cdot a(x+n) = p(x|n) \cdot v^n \cdot \sum_{j=0}^{110-(x+n)} p(j|x+n) \cdot v^j \quad (9)$$

The premium rate for longevity insurance  $prs(x,i,n)$  is:

$$prs(x,i,n) = \frac{(1+\gamma_2) \cdot b(x,n)}{(1-\gamma_1) \cdot a(x|n)} \quad (10)$$

where  $\gamma_1$  represents the rate of administration expenses that are charged against the policy in the period of premium payments and  $\gamma_2$  represents the rate of administration expenses that are charged against the policy in the period of annuity payments. The yearly amount of premium for longevity insurance ( $PR_{LO}$ ) is calculated as:

$$PR_{LO} = prs(x,i,n) \cdot R_h \quad (11)$$

where  $R_h$  is the annuity payment (yearly amount of annuity, *x* is age, *i* is interest rate and *n* presents a premium payment period, in years). The yearly amount of premium (*PR*) is calculated as:

$$PR = PR_{LTC} + PR_{LO} \quad (12)$$

In this case, the yearly drawing amount (*YDA*) that the beneficiary can draw from the real estate is:

$$YDA = \frac{i \cdot MLA}{(1+i)^n - 1} = YPA + PR_{LTC} + PR_{LO} + AC = YPA + prs(x,i,n) \cdot (YPA + MLA \cdot i) \quad (13)$$

where *YPA* is the yearly disbursement amount withdrawn from the equity of housing asset.



When functional capacities of homeowner decline to such level that he is no longer able to live in his own house, the homeowner's housing equity is used to purchase supported housing unit in the assisted living facility or retirement community of homeowner's choice.

#### 4.4 Numerical example for reverse mortgage with LTC insurance

We shall study the dynamics of the reverse mortgage income, calculated on the basis of 1.75% interest rate on the outstanding loan, and 1.75% discount rate embedded in the deferred lifetime annuity premium (male population, DAV1994R), and mortality tables for payment of premiums for male population after 65 age (male population, Slovenian mortality tables 2007) at the following other parameters:

- age of residential property owner at the closing of reverse mortgage contract is 65;
- value of property is constant at 160,000 EUR;
- discount rate used by insurance company for calculated annuity premium is 1.75%;
- mortality tables used for calculating annuity premium are the same as are prescribed by Slovenian Agency for Insurance Supervision for calculating mathematical reserves (DAV1994R);
- administrative costs for payment processing and disbursement are calculated at 5% of premium and annuity amount accordingly;
- the interest rate on outstanding loan charged by financial institution is 1.75%;
- closing costs are calculated as 2% of value of property;
- accounting costs are fixed at 120 EUR per amount;
- longevity premium amounts 2,948.98 EUR;
- LTC premium is calculated as NPV of LTC costs for social care based on the health care tables (ZZZS, 2017): 8 EUR per 0.5 hour, 16 EUR per 1 hour, 24 EUR per 1.5 hours per day, yearly premium payable for 16 years: 420.64 EUR and
- monthly disbursement in amount of 333.33 EUR.

Table 8: The initial Equity Release Scheme

Age	Year	Drawing amount	$C=B(y)+E(y-1)$	Interest amount	Accumulated debt $C(y)+D(y)$	Longevity premium	LTC premium	Accounting costs	Yearly disbursement EUR per year	Value of contract (end of year)
x	Y	B	C	D	E					
						$PR_{LO}$	$PR_{LTC}$	$AC$	$YPA$	
65	1	7,989.62	11,189.62	195.82	11,385.44	2,948.98	420.64	120.00	4,500.00	148,614.56
66	2	7,989.62	19,375.06	339.06	19,714.12	2,948.98	420.64	120.00	4,500.00	140,285.88
67	3	7,989.62	27,703.74	484.82	28,188.56	2,948.98	420.64	120.00	4,500.00	131,811.44
68	4	7,989.62	36,178.18	633.12	36,811.30	2,948.98	420.64	120.00	4,500.00	123,188.70
69	5	7,989.62	44,800.92	784.02	45,584.93	2,948.98	420.64	120.00	4,500.00	114,415.07
70	6	7,989.62	53,574.55	937.55	54,512.11	2,948.98	420.64	120.00	4,500.00	105,487.89
71	7	7,989.62	62,501.73	1,093.78	63,595.51	2,948.98	420.64	120.00	4,500.00	96,404.49
72	8	7,989.62	71,585.13	1,252.74	72,837.87	2,948.98	420.64	120.00	4,500.00	87,162.13
73	9	7,989.62	80,827.49	1,414.48	82,241.97	2,948.98	420.64	120.00	4,500.00	77,758.03
74	10	7,989.62	90,231.59	1,579.05	91,810.64	2,948.98	420.64	120.00	4,500.00	68,189.36
75	11	7,989.62	99,800.26	1,746.50	101,546.76	2,948.98	420.64	120.00	4,500.00	58,453.24
76	12	7,989.62	109,536.38	1,916.89	111,453.27	2,948.98	420.64	120.00	4,500.00	48,546.73
77	13	7,989.62	119,442.89	2,090.25	121,533.14	2,948.98	420.64	120.00	4,500.00	38,466.86
78	14	7,989.62	129,522.76	2,266.65	131,789.41	2,948.98	420.64	120.00	4,500.00	28,210.59
79	15	7,989.62	139,779.03	2,446.13	142,225.16	2,948.98	420.64	120.00	4,500.00	17,774.84
80	16	7,989.62	150,214.78	2,628.76	152,843.54	2,948.98	420.64	120.00	4,500.00	<b>7,156.46</b>
		<b>127,833.92</b>		<b>21,809.62</b>		<b>47,183.68</b>	<b>6,730.24</b>	<b>1,920.00</b>	<b>72,000.00</b>	
Closing costs		<b>3,200.00</b>								
Residential property value					<b>160,000.00</b>					

In case of residential property value which equals 160,000 EUR, which is not growing through the time horizon of owners life span all the costs associated with the closing of a reverse mortgage contract (brokerage fee, assessment fee, notary fee and other administration costs) are 2% (3,200 EUR). The yearly amount drawn from the residential real estate equity is equal to 7,989.62 EUR. This amount is then divided into three parts: (a) 120 EUR covers administration fee, for maintaining reverse mortgage account with a financial institution, (b) the amount of 2,948.98 EUR longevity insurance premium and is used to purchase the lifetime annuity that starts at age 80, after exhausting all the equity in the residential real estate property (in case that real-estate owner is living longer than expected), (c) LTC insurance premium 420.64 EUR. The yearly amount of 4,500 EUR is disbursed to the property owner, who is staying in his property until the end of his life in any case. At the end of his life, the costs of refurbishing and selling the property are covered by remaining 7,156.46 EUR. After refurbishing the house is sold for 160,000 EUR which was also estimated price at the beginning of the time horizon of our simulation.

Transition from own home to privately own assisted living housing unit:

Let's assume the case that after living in his owned house of 11 years function capacity of home owner declines so that he is no longer able to live in his own house under stipulation of flexible reverse mortgage contract he is allowed to sell his house unit and buy assisted living housing unit for 120,000 EUR. Proceed of sale above the purchase price in the amount of 40,000 EUR is used for repayment of the loan and the new reverse mortgage scheme is the following:

Table 9: The modified Equity Release Scheme after the sale of original home for 160,000 EUR and purchase of assisted living - housing unit for 120,000 EUR

Age	Year	Drawing amount	$C=B(y)+E(y-1)$	Interest amount	Accumulated debt $C(y)+D(y)$	Longevity premium	LTC premium	Accounting costs	Yearly disbursement EUR per year	Value of contract (end of year)
x	Y	B	C	D	E					
						$PR_{LO}$	$PR_{LTC}$	AC	YPA	
65	1	7,989.62	11,189.62	195.82	11,385.44	2,948.98	420.64	120.00	4,500.00	148,614.56
66	2	7,989.62	19,375.06	339.06	19,714.12	2,948.98	420.64	120.00	4,500.00	140,285.88
67	3	7,989.62	27,703.74	484.82	28,188.56	2,948.98	420.64	120.00	4,500.00	131,811.44
68	4	7,989.62	36,178.18	633.12	36,811.30	2,948.98	420.64	120.00	4,500.00	123,188.70
69	5	7,989.62	44,800.92	784.02	45,584.93	2,948.98	420.64	120.00	4,500.00	114,415.07
70	6	7,989.62	53,574.55	937.55	54,512.11	2,948.98	420.64	120.00	4,500.00	105,487.89
71	7	7,989.62	62,501.73	1,093.78	63,595.51	2,948.98	420.64	120.00	4,500.00	96,404.49
72	8	7,989.62	71,585.13	1,252.74	72,837.87	2,948.98	420.64	120.00	4,500.00	87,162.13
73	9	7,989.62	80,827.49	1,414.48	82,241.97	2,948.98	420.64	120.00	4,500.00	77,758.03
74	10	7,989.62	90,231.59	1,579.05	91,810.64	2,948.98	420.64	120.00	4,500.00	68,189.36
<b>75</b>	<b>11</b>	<b>7,989.62</b>	<b>99,800.26</b>	<b>1,746.50</b>	<b>101,546.76</b>	<b>2,948.98</b>	<b>420.64</b>	<b>120.00</b>	<b>4,500.00</b>	<b>58,453.24</b>
Sale of original home and purchase of assisted living - housing unit					-40,000.00					
					61,546.76					
76	12	7,989.62	69,536.38	1,216.89	70,753.27	2,948.98	420.64	120.00	4,500.00	49,246.73
77	13	7,989.62	78,742.89	1,378.00	80,120.89	2,948.98	420.64	120.00	4,500.00	39,879.11
78	14	7,989.62	88,110.51	1,541.93	89,652.45	2,948.98	420.64	120.00	4,500.00	30,347.55
79	15	7,989.62	97,642.07	1,708.74	99,350.80	2,948.98	420.64	120.00	4,500.00	20,649.20
80	16	7,989.62	107,340.42	1,878.46	109,218.88	2,948.98	420.64	120.00	4,500.00	<b>10,781.12</b>
		<b>127,833.92</b>		<b>17,165.26</b>		<b>47,183.68</b>	<b>6,730.24</b>	<b>1,920.00</b>	<b>72,000.00</b>	
Closing costs		3,200.00								
Residential property value					120,000.00					

#### 4.5 Mitigating the risk of longevity and covering LTC expenditure at volatile housing prices

The main risks concerning reverse mortgage that can cause credit default are:

- the uncertain longevity of the owner occupier, realized when the value of a property being sold does not cover the amount of loan;
  - the risk of an increase in interest rates, and
  - depreciation in the value of the property,
- though some political changes could also influence the value of the property (Černe et al., 2012).

Deferred annuity as insurance for longevity is already used in the insurance industry, but not in combination with a reverse mortgage as the one proposed here. Sustainability and market consistency regarding longevity are among the main concerns of The Actuarial Association of Europe<sup>75</sup>.

Without an effective insurance for longevity and LTC risks, real estate cannot be used as the vehicle for financing LTC expenditures in community care, because the equity release without longevity insurance presents a great risk for the provider of a reverse mortgage (bank) and is not covering increasing expenditures for care of the beneficiary. For the reverse mortgage provider, there is the risk that the value of the loan together with accrued interest will be greater than the value of real estate in case of the death of the beneficiary. For the beneficiary, there is the risk that he will live longer than the agreed period of drawing liquid amounts that are defined in the reverse mortgage loan contract. To avoid exposure to these risks, a safe reverse mortgage contract also needs to include a kind of insurance for longevity. This insurance can be provided in three ways:

(a) Through public finance so that the risk is socialized and the management of risk is assumed by the government (as is the case in the USA where The Home Equity Conversion Mortgages Insurance is a clear example of such a scheme. Lenders under this program are protected against losses arising when the loan balance exceeds the value of real estate at the time of settlement. But because of implicit government guarantees underlying this insurance, it may become a serious drain on the fiscus, as the market expands after crisis, as also described by Wang et al. (2007) and Chen et al. (2010).

(b) The risk can be transferred to insurance companies. According to the results in Blake et al. (2013), the huge economic significance of the longevity risk has begun to be recognized and quantified in their article, presenting the birth and development of the Life Market, the new market related to the transfer of longevity and mortality risks. The authors note that the emergence of a traded market in longevity-linked capital market instruments could act as a catalyst to help facilitate the development of annuity markets, both in the developed and the developing worlds, and protect the long-term viability of retirement income provision globally. The possible instruments have been studied and developed also in Lee et al. (2012) and Yang and Wang (2013);

(c) The third way is possible through a mutual insurance company, as proposed in Bogataj (2013) and inherently present in this paper. The risk of longevity can be mitigated by the use of annuity insurance where legal, obligatory mortality tables in Slovenia are German *DAVI994R*, which is close to mortality projection 2050; hence, insurance companies benefit on an overestimation of longevity today. Indeed, it is better to share the benefit of this overestimation among the remaining seniors, but it is difficult to avoid the impact of the volatile interest rate.

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<sup>75</sup> See the articles at: [www.actuary.eu](http://www.actuary.eu), where the second author is member of Pension Committee.

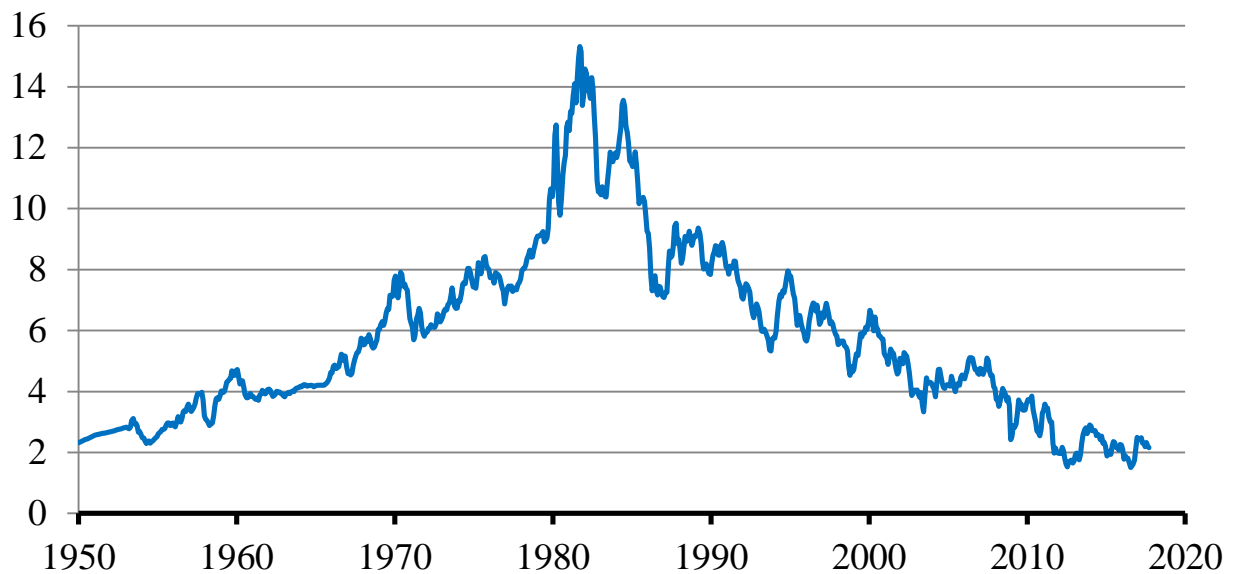


Fig. 1: US long term interest rate in period 1950-2017 (Source: Shiller, 2005+updates)

As followed from Figure 1, in last 67 years long term interest rate was very volatile and it was in range between 2% and 16%. Long term interest rate influences affordability of reverse mortgage for home owners.

We can calculate premiums for LTC insurance at a different interest rate as presented in the Table 10.

Table 10: The influence of the interest rate on premiums

Interest rate	APV	Male		
		$P_{65}^{LTC}$	$P_{25:40}^{LTC}$	$P_{65:16}^{LTC}$
1.00	6.060,27	6.363,28	71,34	450,60
<b>1.75</b>	<b>5,363.46</b>	<b>5,631.63</b>	<b>46.97</b>	<b>420.64</b>
2.00	5.154,75	5.412,49	40,92	411,38
3.00	4.420,24	4.641,25	23,75	377,61
4.00	3.820,56	4.011,59	13,95	348,46
5.00	3.327,78	3.494,17	8,29	323,21
6.00	2.920,28	3.066,29	4,98	301,31
7.00	2.581,17	2.710,23	3,02	282,24
8.00	2.297,24	2.412,10	1,85	265,61
9.00	2.058,07	2.160,97	1,15	251,05
10.00	1.855,42	1.948,19	0,72	238,29

APV - Actuarial present value

From the Figure 2 we can see that real estate values fluctuate over time.

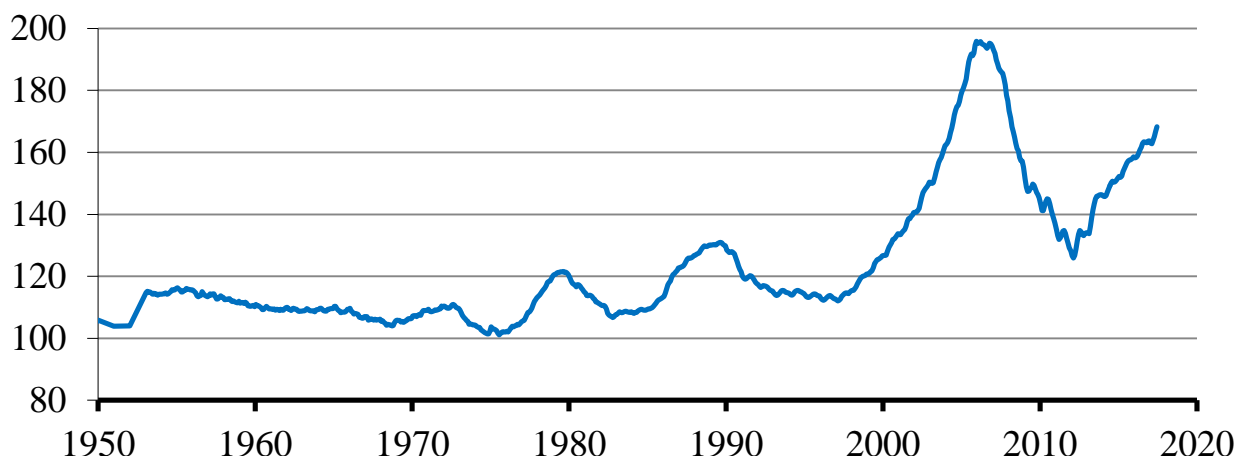


Figure 2: Volatility of Home Prices (in %: 1890–2017) in USA (Source: Shiller, 2005+updates by authors)

In the event of a collapse in the value of real estate market, there is a risk that the bank, as a lender, will not be able to settle the approved loan by selling a property

## 5. Conclusions and plan for further research

Proper age-friendly housing provision that is appropriate to support independence and autonomy of seniors with declining functional capacities can lower cost of health care and improve wellbeing of older people. For further development of this kind of facilities for seniors, we advised reverse mortgage with embedded LTC insurance as possible financial instrument for financing LTC services and sheltered housing. This kind of assisted living facilities for person dependent on the help of others should be available for rapid growth of old cohorts in European population.

We have presented long term care insurance as relatively cheap way to provide coverage for expenditure for long term care needs in old age. Namely, the cost of long term care can be as high as the value of one's home. Reverse mortgage transforms fixed assets in owner occupied dwellings into liquid assets for financing expenditure for more proper housing and LTC needs in the old age. We have shown that the properly structured reverse mortgage scheme with embedded LTC insurance can assure homeowner that he will age independent and autonomous with the amount of care that fits his functional capacity.

Here the probabilities that someone becomes dependent on the help of others were derived from National Health Insurance data for nursing home residents and the list of those who are waiting to be assigned the right and be accepted to nursing home. If comprehensive information system for LTC services that would include the registers of applications for endorsements in home care, assisted living care and care provided in nursing home, insurance companies and banks would have much better knowledge regarding cash flows associated with financing LTC expenditure and assisted living facilities. Such information system would allow them to develop better insurance and reverse mortgage financial products. This information would allow municipalities, developers and investors in assisted living facilities to improve the spatial planning and planning of investments in assisted living facilities on the municipality level. Further study should include the assessment of proper assisted-living facilities and community care for persons that are dependent on the help of others, associated with the analysis of cost of health care and longevity of senior residents. Further research is proposed regarding how introduction of LTC insurance would influence the frequency and severity of LTC claims. There is reasonable to expect that more proper age-friendly environment and community care would increase life expectancy and reduce the cost of care and increase LTC premiums. So, further

studies of risks mitigated by LTC insurance and longevity insurance embedded in reverse mortgage is proposed. Further study regarding social value of sheltered housing and its influence on urban land rent is proposed, especially in connection with influence of sheltered housing and assisted living facilities on health and health related expenditures of residents.

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## **The problems of farm definitions for the needs of the implementation of tax policy**

Boštjan Aver

Marijana Kunc

Alenka Temeljotov Salaj

Nova University, European Faculty of Law, Slovenia

E-mail: bostjan.aver@evro-pf.si

### **Abstract**

According to the Forestry Institute (ZGS) in Slovenia, more than 313,000 forested land is owned by as many as 461,000 forest owners. Similar fragmentation is also characteristic of agricultural land. In Slovenia, more than 420,000 households, whose members own or use agricultural and forest land, are liable for personal income tax from these land (due to the exemption for all households with a maximum of EUR 200 of income from basic agricultural and basic forestry activities) About 70,000 households or about 95,000 people. All these households are considered to be rural households in accordance with the Personal Income Tax Act. Almost a quarter of the population of Slovenia is faced with tax legislation in the field of agriculture and forestry. In the paper, the tax regulations will be presented governing the field of agricultural and forestry activities and, on the case of selected farms, examine the consequences of the existing regulation for taxable persons performing basic agricultural and basic forestry activities.

**Keywords:** Property, Agricultural land, Income Taxation.

## 1. UVOD

V Sloveniji je po podatkih Zavoda za gozdove (ZGS) več kot 313.000 gozdnih zemljišč, ki jih ima v lasti kar 461.000 lastnikov gozdov (Internetni vir 1, 2016)<sup>76</sup>. Podobna razdrobljenost je značilna tudi za kmetijska zemljišča. V Sloveniji je več kot 420.000 gospodinjstev, katerih člani imajo v lasti ali uporabi kmetijska in gozdna zemljišča, za dohodnino od dohodkov od teh zemljišč pa je (zaradi oprostitve za vsa gospodinjstva z največ 200 evri dohodka iz osnovne kmetijske in osnovne gozdarske dejavnosti) zavezanih le okoli 70.000 gospodinjstev oziroma okoli 95.000 oseb<sup>77</sup>. Vsa ta gospodinjstva se skladno z Zakonom o dohodnini<sup>78</sup> štejejo med kmečka gospodinjstva. Z davčno zakonodajo s področja kmetijske in gozdarske dejavnosti se torej srečuje skoraj četrtina prebivalcev Slovenije.

V nadaljevanju bomo predstavili davčne predpise, ki urejajo področje kmetijske in gozdarske dejavnosti in na primeru izbranih kmetij preučili posledice obstoječe ureditve za davčne zavezance, ki opravljajo osnovno kmetijsko in osnovno gozdarsko dejavnost.

## 2. ZAKON O DOHODNINI

Dohodnina je davek od dohodkov fizičnih oseb<sup>79</sup>. Z Zakonom o dohodnini sta določena dva načina obdavčitve dohodkov fizičnih oseb in sicer t. i. sintetična obdavčitev in t. i. cedularna obdavčitev. Prihodek fizične osebe, ki je obdavčen s cedularno obdavčitvijo, se ne všteva v letno davčno osnovo, temveč se vsaka posamezna vrsta dohodka obdavči samostojno z enotno davčno stopnjo. Prihodki fizične osebe, ki so obdavčeni sintetično, se na letni ravni seštevajo, za določitev letne davčne osnove pa se uporabi progresivna davčna lestvica.

Dohodki, ki se ne vštevajo v letno davčno osnovo (so obdavčeni cedularno), so:

- dohodek iz dejavnosti, kadar se ugotavlja na podlagi dejanskih prihodkov in normiranih odhodkov,
- dohodek iz oddajanja premoženja v najem in
- dohodek iz kapitala.

Dohodki, ki se vštevajo v letno davčno osnovo (so obdavčeni sintetično), so:

- dohodek iz zaposlitve,
- dohodek iz dejavnosti, kadar se ugotavlja na podlagi dejanskih prihodkov in dejanskih odhodkov,
- dohodek iz osnovne kmetijske in osnovne gozdarske dejavnosti,
- drugi dohodki.
- 

Kmetijska gospodarstva lahko v Republiki Sloveniji ugotavljajo davčno osnovo za dohodnino na dva načina:

- od dohodka iz dejavnosti (III.3. poglavje ZDoh-2) ali
- od dohodka iz osnovne kmetijske in osnovne gozdarske dejavnosti (III.4. poglavje ZDoh-2).

### a. Ugotavljanje davčne osnove za dohodnino od dohodka iz dejavnosti

Za dohodek iz dejavnosti se šteje dohodek, dosežen z neodvisnim samostojnim opravljanjem dejavnosti, ne glede na namen in rezultat opravljanja dejavnosti. Opravljanje dejavnosti pomeni opravljanje vsake podjetniške, kmetijske ali gozdarske dejavnosti, poklicne dejavnosti ali druge neodvisne dejavnosti, vključno z izkoriščanjem premoženja in premoženjskih pravic<sup>80</sup>. Davčna osnova

<sup>76</sup> [http://www.zgs.si/slo/gozdovi\\_slovenije/o\\_gozdovih\\_slovenije/lastnistvo\\_gozdov/index.html](http://www.zgs.si/slo/gozdovi_slovenije/o_gozdovih_slovenije/lastnistvo_gozdov/index.html)

<sup>77</sup> Pajntar Neva, Dohodnina in kmetijstvo, Kmetijsko gozdarska zbornica Slovenije (KGZS), Sektor za kmetijstvo in gozdarstvo, 2015, str. 11.

<sup>78</sup> Zakon o dohodnini (Uradni list RS, št. 13/11-uradno prečiščeno besedilo in naslednji).

<sup>79</sup> Drugi odstavek 1. člena ZDoh-2.

<sup>80</sup> Prvi odstavek 46. člena ZDoh-2.

od dohodka iz dejavnosti je dobiček, ki se ugotovi kot razlika med prihodki in odhodki, doseženimi v zvezi z opravljanjem dejavnosti<sup>81</sup>. Ugotavljanje davčne osnove od dohodka iz dejavnosti je skladno z Zakonom o davku od dohodkov pravnih oseb<sup>82</sup> mogoče:

- z upoštevanjem dejanskih prihodkov in dejanskih odhodkov ali
- z upoštevanjem dejanskih prihodkov in normiranih odhodkov.

Kadar kmetijsko gospodarstvo opravlja kmetijsko dejavnost v statusno-pravni obliki pravne osebe (gospodarske družbe, zadruga, zavodi...) ali samostojnega podjetnika posameznika se kot davčna osnova za dohodnino upošteva dohodek iz dejavnosti v skladu z poglavjem III.3. ZDoh-2<sup>83</sup>. Ugotavljanje osnove dohodka iz dejavnosti je mogoče, če zavezanec vodi poslovne knjige v skladu z določbami Zakona o gospodarskih družbah (v nadaljevanju: ZGD-1) oziroma Slovenskimi računovodskimi standardi (SRS). Zanimivo je, da se ZGD-1 za osebe, ki kot posamezniki ali skupno opravljajo kmetijsko ali gozdarsko dejavnost, uporablja le, če se prostovoljno vpišejo v sodni register kot družbe ali v Poslovni register Slovenije kot podjetniki<sup>84</sup>. Iz tega izhaja, da se kmetijskim in gozdnim gospodarstvom ni potrebno vpisati v Sodni register oziroma Poslovni register Slovenije, niti jih ne zavezujejo zahteve glede računovodstva in knjigovodstva<sup>85</sup>. Primerjalno gledano to ni posebnost, saj so tudi v sosednji Avstriji vsa kmetijska gospodarstva (ne glede na statusno-pravno obliko) izvzeta iz obveznosti vodenja računovodstva<sup>86</sup>. V zvezi z vodenjem računovodstva in knjigovodstva velja namreč na podlagi 125. člena BAO<sup>87</sup> za kmetijska in gozdna gospodarstva v Avstriji posebna ureditev.

V Sloveniji takšne posebne ureditve trenutno nimamo. V letu 2012 je bil sicer sprejet Zakon o spremembah in dopolnitvah Zakona o dohodnini<sup>88</sup>, po katerem so bila kmetijska gospodarstva zavezana k ugotavljanju davčne osnove na podlagi dejanskih prihodkov in odhodkov oziroma dejanskih prihodkov in normiranih odhodkov, če so v povprečju dveh koledarskih let presegla 7.500 evrov dohodkov iz osnovne kmetijske in osnovne gozdarske dejavnosti, a je bila ta obveznost s 1. 1. 2016 ukinjena. Kljub temu se lahko člani kmečkega gospodinjstva še vedno prostovoljno odločijo, da bodo ugotavljali davčno osnovo na podlagi dejanskih prihodkov in odhodkov oziroma na podlagi dejanskih prihodkov in normiranih odhodkov. Pogoji za to je, da enega od članov kmečkega gospodinjstva, za katerega se šteje, da opravlja osnovno kmetijsko in osnovno gozdarsko dejavnost, določijo kot zavezanca za celotno kmetijsko in gozdarsko dejavnost v okviru kmečkega gospodinjstva (kot nosilca te dejavnosti). Če se v okviru kmečkega gospodinjstva opravlja tudi druga kmetijska ali dopolnilna dejavnost na kmetiji, postane nosilec dejavnosti zavezanec za celotno kmetijsko in dopolnilno dejavnost v okviru kmečkega gospodinjstva. Tak način ugotavljanja davčne osnove morajo priglasiti davčnemu organu in se zavezati, da bodo davčno osnovo na tak način ugotavljali najmanj pet davčnih let<sup>89</sup>.

Zavezanci za plačilo dohodnine od dohodka iz dejavnosti so tudi vsi nosilci in člani kmetij, ki opravljajo dopolnilno dejavnost na kmetiji. Dopolnilna dejavnost na kmetiji je dejavnost, ki omogoča

<sup>81</sup> Prvi odstavek 48. člena ZDoh-2.

<sup>82</sup> Zakon o davku od dohodkov pravnih oseb (Uradni list RS, št. 117/2006).

<sup>83</sup> Pri čemer zavezanec, ki je zavod, društvo, ustanova, verska skupnost, politična stranka, zbornica, reprezentativni sindikat ne plača davka od dohodka pravnih oseb, če je v skladu s posebnim zakonom ustanovljen za opravljanje nepridobitne dejavnosti, in dejansko posluje skladno z namenom ustanovitve in delovanja (prvi odstavek 9. člena ZDDPO).

<sup>84</sup> Drugi odstavek 9. člena ZGD-1.

<sup>85</sup> Podobno, vendar pomensko precej ožjo določbo vsebuje tudi avstrijski UGB (za kmetijska gospodarstva se ne uporabljajo določbe glede samostojnega podjetnika, firme, vpisa v trgovinski register (Firmenbuch), prenosa podjetja in prokure).

<sup>86</sup> Četrty odstavek 189. člena UGB.

<sup>87</sup> Bundesabgabenordnung (StF: [BGBl. Nr. 194/1961](#) (NR: GP IX [RV 228 AB 456 S. 70](#), BR: [S. 178](#))).

<sup>88</sup> Zakon o spremembah in dopolnitvah zakona o dohodnini (Uradni list RS, št. 94/12, ZDoh-2L)

<sup>89</sup> 47. člen ZDoh-2.

boljšo rabo proizvodnih zmogljivosti in delovnih moči kmetije ter pridobivanje dodatnega dohodka na kmetiji<sup>90</sup>. Na kmetiji se lahko opravljajo naslednje skupine dopolnilnih dejavnosti:

- predelava primarnih kmetijskih pridelkov,
- predelava gozdnih lesnih sortimentov,
- prodaja kmetijskih pridelkov in izdelkov s kmetij,
- vzreja in predelava vodnih organizmov,
- turizem na kmetiji,
- dejavnost, povezana s tradicionalnimi znanji na kmetiji, storitvami oziroma izdelki,
- predelava rastlinskih odpadkov ter proizvodnja in prodaja energije iz obnovljivih virov,
- storitve s kmetijsko in gozdarsko mehanizacijo in opremo ter ročna dela,
- svetovanje in usposabljanje v zvezi s kmetijsko, gozdarsko in dopolnilno dejavnostjo,
- socialno-varstvene storitve<sup>91</sup>.

Nosilec dopolnilne dejavnosti na kmetiji je lahko nosilec kmetije ali član kmetije, ki ima za opravljanje dopolnilne dejavnosti na kmetiji soglasje nosilca kmetije<sup>92</sup>. Nosilec dopolnilno dejavnost registrira pri upravni enoti in se vpiše v poslovni register pri AJPES. Po registraciji mora davčnemu organu predložiti tudi odločitev glede ugotavljanja davčne osnove. Davčna osnova se lahko ugotavlja na podlagi dejanskih prihodkov in normiranih odhodkov ali pa na podlagi dejanskih prihodkov in dejanskih odhodkov. Letni dohodek iz dopolnilnih dejavnosti na kmetiji ne sme presegati treh povprečnih letnih plač na zaposlenega v Republiki Sloveniji v preteklem letu, na območjih z omejenimi možnostmi za kmetijsko dejavnost pa ne sme presegati petih povprečnih letnih plač na zaposlenega v Republiki Sloveniji v preteklem letu<sup>93</sup>.

Kadar se davčna osnova na kmetiji ugotavlja na podlagi dohodka iz osnovne kmetijske in osnovne gozdarske dejavnosti (III.4. ZDoh-2) se nosilec dopolnilne dejavnosti lahko odloči, ali bo davčno osnovo od dohodka iz dopolnilne dejavnosti ugotavljal na podlagi dejanskih prihodkov in odhodkov ali na podlagi dejanskih prihodkov in normiranih odhodkov.

Kot dohodek iz dopolnilne dejavnosti se šteje dohodek, brez znižanj, povečanj in davčnih olajšav, ugotovljen kot razlika med davčno priznanimi prihodki in odhodki, kakor je izkazan v davčnem obračunu akontacije dohodnine od dohodka iz dejavnosti. Kadar se davčna osnova od dohodka iz dopolnilne dejavnosti ugotavlja z upoštevanjem normiranih odhodkov, se kot dohodek iz dopolnilne dejavnosti šteje dohodek dopolnilne dejavnosti, ugotovljen na podlagi podatkov obračuna dohodnine iz dohodka iz dejavnosti.

Če nosilec dopolnilne dejavnosti na kmetiji opravlja še druge dejavnosti in se za vse dejavnosti na kmetiji (kmetijsko, gozdarsko in dopolnilno) ugotavlja davčna osnova na podlagi dejanskih prihodkov in odhodkov ali na podlagi dejanskih prihodkov in normiranih odhodkov, se kot dohodek dopolnilne dejavnosti šteje delež dohodka, ki pripada dopolnilni dejavnosti. Nosilec dopolnilne dejavnosti na kmetiji mora voditi ločeno evidenco prihodkov iz dopolnilne dejavnosti na kmetiji.

Izpolnjevanje pogojev glede višine letnega dohodka iz dopolnilnih dejavnosti na kmetiji vsako leto do 30. junija preverja upravna enota, ki je izdala dovoljenje za opravljanje dopolnilne dejavnosti. Nosilec

<sup>90</sup> 99. člen Zakona o kmetijstvu (ZKme-1).

<sup>91</sup> Skladno s 3. členom Uredbe o dopolnilnih dejavnostih na kmetiji pa lahko dopolnilno dejavnost na kmetiji registrirajo celo zaposleni na kmetiji, ki so vpisani v register kmetijskih gospodarstev in druge osebe, ki opravljajo delo na kmetiji, pod pogojem, da to delo ni opredeljeno kot zaposlovanje na črno v skladu z Zakonom o preprečevanju dela in zaposlovanja na črno (podjemna, avtorska, mandatna pogodba, upokojenci, ki so sklenili pogodbo o opravljanju začasnega in občasnega dela, študenti, ki opravljajo delo v skladu s predpisi, ki urejajo občasno ali začasno delo študentov in dijakov).

<sup>92</sup> 100. člen ZKme-1.

<sup>93</sup> Drugi odstavek 99. člena ZKme-1.

dopolnilne dejavnosti mora zato upravni enoti najkasneje do tega roka sporočiti podatke o letnem dohodku<sup>94</sup>.

**b. Ugotavljanje davčne osnove na podlagi dohodka iz osnovne kmetijske in osnovne gozdarske dejavnosti**

V praksi velika večina kmetij plačuje dohodnino od dohodka iz osnovne kmetijske in osnovne gozdarske dejavnosti (III.4. ZDoh-2). Za dohodek iz osnovne kmetijske in gozdarske dejavnosti se štejejo potencialni tržni dohodki od pridelave na zemljiščih oziroma v panjih in drugi dohodki, ki so plačila iz naslova ukrepov kmetijske politike in druga plačila iz naslova državnih pomoči, prejeta v zvezi z opravljanjem osnovne kmetijske in osnovne gozdarske dejavnosti<sup>95</sup>.

Davčna osnova od potencialnih tržnih dohodkov je za pridelavo na zemljiščih katastrski dohodek, kot je ugotovljen po Zakonu o ugotavljanju katastrskega dohodka (ZUKD-2) na dan 30. junija leta, za katero se dohodek ugotavlja. Davčna osnova od potencialnih tržnih dohodkov za pridelavo v panjih je 70 % pavšalne ocene dohodka na panj kot je ugotovljena po ZUKD-2. Davčna osnova od drugih dohodkov je vsak posamezni dohodek<sup>96</sup>.

Vrste dohodkov iz osnovne kmetijske in gozdarske dejavnosti	Davčna osnova
Potencialni tržni dohodki od pridelave na kmetijskih in gozdnih zemljiščih	Katastrski dohodek
Čebelji panji	70 % pavšalne ocene dohodka na panj
Drugi dohodki (plačila iz naslova ukrepov kmetijske politike, državne pomoči)	Vsak posamezen dohodek

ZDoh-2 za namen obračuna dohodnine od dohodka iz osnovne kmetijske in osnovne gozdarske dejavnosti določa pojem »kmečko gospodinjstvo«. Kmečko gospodinjstvo je skupnost ene ali več fizičnih oseb, članov enega ali več gospodinjstev, evidentiranih na istem naslovu, ki so na dan 30. junija v davčnem letu po predpisih o prijavi prebivališča stalno ali začasno prijavljene na tem naslovu, niso najeta delovna sila, ter se vsaj za enega ali več članov kmečkega gospodinjstva šteje, da opravljajo osnovno kmetijsko in osnovno gozdarsko dejavnost in njihov skupni dohodek iz osnovne kmetijske in osnovne gozdarske dejavnosti znaša najmanj 200 evrov<sup>97</sup>.

Člani kmečkega gospodinjstva niso nujno vpisani v register kmetijskih gospodarstev kot člani kmetije. Kot člani kmetije se v RKG vpišejo vse fizične osebe, starejše od 15 let, ki imajo stalno prebivališče na istem naslovu kot nosilec kmetije. Te osebe se v RKG vpišejo po uradni dolžnosti na podlagi podatkov centralnega registra prebivalstva (CRP). Ker lahko prebivališče obsega tudi več stanovanjskih enot<sup>98</sup>, se v RKG kot člani kmetije po uradni dolžnosti vpišejo le tiste osebe, ki so prijavljene v isti stanovanjski enoti kot nosilec kmetije. Kot člani kmetije pa se lahko v RKG vpišejo tudi sorodniki nosilca kmetije, ki delajo na kmetiji, vendar imajo stalno prebivališče na drugem naslovu kot nosilec kmetije. Za vpis tega člana kmetije mora nosilec kmetije pridobiti njegovo soglasje.

<sup>94</sup> 101. člen ZKme-1.

<sup>95</sup> 70. člen ZDoh-2.

<sup>96</sup> 70. člen ZDoh-2.

<sup>97</sup> Drugi odstavek 69. člena ZDoh-2.

<sup>98</sup> Drugi odstavek 5. člena Zakona o centralnem registru prebivalstva (Uradni list RS, št. 72/06 – uradno prečiščeno besedilo) in navodila za izpolnjevanje obrazca »Vloga za vpis v register kmetijskih gospodarstev [http://rkg.gov.si/GERK/Pravilnik\\_o\\_RKG\\_2010/Navodila\\_Priloga\\_01\\_Vloga\\_za\\_vpis\\_v\\_register\\_kmetijskih\\_gospodarstev.pdf](http://rkg.gov.si/GERK/Pravilnik_o_RKG_2010/Navodila_Priloga_01_Vloga_za_vpis_v_register_kmetijskih_gospodarstev.pdf). Z dne 19. 2. 2017.

Davčni organ pri odmeri dohodnine vključi v kmečko gospodinjstvo vse osebe, ki so prijavljene na istem naslovu kot zavezanec, za katerega se šteje, da opravlja osnovno kmetijsko in osnovno gozdarsko dejavnost. Če je na nekem naslovu prijavljenih več oseb, za katere se šteje, da opravljajo osnovno kmetijsko in osnovno gozdarsko dejavnost, se šteje, da je v kmečkem gospodinjstvu več zavezancev za dohodnino iz naslova osnovne kmetijske in osnovne gozdarske dejavnosti. Dohodek iz osnovne kmetijske in gozdarske dejavnosti se razdeli med njih v skladu z določbami ZDoh-2. Na odločbi o odmeri dohodnine se vsakemu zavezancu navede tudi število članov njegovega kmečkega gospodinjstva. V kmečko gospodinjstvo davčni organ ne vpiše članov kmetije, ki delajo na kmetiji, nimajo pa prijavljenega stalnega ali začasnega prebivališča na istem naslovu kot njihov družinski član, za katerega se šteje, da opravlja osnovno kmetijsko in osnovno gozdarsko dejavnost.

Kot osnovna kmetijska in osnovna gozdarska dejavnost se šteje pridelava, kot je določena s ZUKD-2 in Zakonom o evidentiranju nepremičnin<sup>99</sup>, je v celoti ali pretežno vezana na uporabo kmetijskih in gozdnih zemljišč ter je ustrezno evidentirana v zemljiškem katastru. Katastrski dohodek se pripisuje vsakemu kmetijskemu in gozdnemu zemljišču glede na njegovo površino, vrsto dejanske rabe in boniteto zemljišča oziroma rastiščni koeficient, kot se vodi v zemljiškem katastru<sup>100</sup>.

Kot osnovna kmetijska dejavnost šteje tudi čebelarstvo, določeno ZUTD-2, vezano na panje, evidentirane v registru čebeljakov<sup>101</sup>. Ne glede na to, se dohodnina ne plača od dohodkov od uporabe 40 čebeljih panjev. Oprostitev se prizna tako, da se davčna osnova od potencialnih tržnih dohodkov čebelarstva zniža za delež, ugotovljen iz razmerja med številom oproščenih panjev in skupnim številom panjev v uporabi članov kmečkega gospodinjstva<sup>102</sup>.

V skladu z zadnjo spremembo zakona o dohodnini<sup>103</sup> se kot osnovna kmetijska dejavnost štejeta tudi pridelava posebnih kultur kot je določena z ZUKD-2 in evidentirana pri Agenciji Republike Slovenije za kmetijske trge in razvoj podeželja (ARSKTRP), ter pridelava na kmetijskih in gozdnih zemljiščih izven Republike Slovenije<sup>104</sup>.

Kot osnovna kmetijska dejavnost pa se ne šteje pridelava sadik sadnega, gozdnega in okrasnega drevja ter grmičevja, pridelava sadik vinske trte in sadik hmelja ter pridelava okrasnih rastlin<sup>105</sup>.

Katastrski dohodek posebnih kultur se določi kot dodatni katastrski dohodek v višini 1,3 katastrskega dohodka intenzivnega sadovnjaka in ostalih trajnih nasadov z boniteto med 51 in 60<sup>106</sup>. Podatke o površini zemljišč, na katerih se pridelujejo zgoraj navedene kulture, Finančna uprava Republike Slovenije (v nadaljevanju: davčni organ) pridobiva po uradni dolžnosti iz vlog, ki jih kmetijska gospodarstva vlagajo za pridobitev neposrednih plačil iz naslova skupne kmetijske politike. Iz trenutno veljavnih pravnih podlag ni razvidno, kolikšna je minimalna površina, ki se bo upoštevala pri odmeri katastrskega dohodka. Glede na to, da mora ugotovljena upravičena površina kmetijske parcele, za katero kmetijsko gospodarstvo uveljavlja podporo za zelenjadnice, znašati vsaj 0,1 ha, menimo, da se bo tudi katastrski dohodek od posebnih kultur upošteval za površine najmanj 0,1 ha.

Po novem se kot dohodek v zvezi z osnovno kmetijsko in osnovno gozdarsko dejavnostjo šteje tudi dohodek od predelave lastnega grozdja v vino na površinah, ki se ocenijo na podlagi obsega proizvodnje vina, evidentiranega pri MKGP, ali priglašenega pri davčnem organu, če gre za vino iz pridelka grozdja izven Slovenije, če:

- člani kmečkega gospodinjstva ne ugotavljajo davčne osnove v skladu z drugim odstavkom 47.

<sup>99</sup> Zakon o evidentiranju nepremičnin (Uradni list RS, št. 47/06, 65/07 – odl. US in 79/12 – odl. US)

<sup>100</sup> 10. člena ZUKD-2.

<sup>101</sup> Šesti odstavek 69. člena ZDoh-2.

<sup>102</sup> osma točka 26. člena ZDoh-2.

<sup>103</sup> Zakon o spremembah in dopolnitvah zakona o dohodnini (Uradni list RS, št. 63/2016, ZDoh-2R)

<sup>104</sup> Četrti in sedmi odstavek 69. člena ZDoh-2.

<sup>105</sup> Peti odstavek 69. člena ZDoh-2.

<sup>106</sup> Drugi odstavek 8. člena ZUKD-2.



- člena ZDoh-2 (na podlagi dejanskih prihodkov in odhodkov oziroma na podlagi dejanskih prihodkov in normiranih odhodkov),
- imajo člani kmečkega gospodinjstva v lasti ali uporabi vsaj 0,3 ha vinograda za predelavo grozdja v vino iz lastnega pridelka grozdja.

Za oceno površine vinogradov za proizvodnjo vina iz lastnega pridelka grozdja se šteje, da se v povprečju na ha proizvede 4.600 litrov vina<sup>107</sup>.

Pri oceni katastrskega dohodka od vina se ne upošteva boniteta zemljišča, temveč se katastrski dohodek vina za vse vinograde določi enako in sicer kot dodatni katastrski dohodek v višini dvakratnika katastrskega dohodka vinograda z boniteto med 51 in 60<sup>108</sup>. Kmečko gospodinjstvo pa je oproščeno plačila dohodnine od dohodka od proizvodnje vina iz lastnega pridelka grozdja, če imajo člani kmečkega gospodinjstva v lasti ali uporabi manj kot 0,3 ha vinograda<sup>109</sup>.

V okviru katastrskega dohodka so od 1. 1. 2017 obravnavani tudi dohodki od t.i. malih obsegov prve stopnje predelave lastnih kmetijskih in gozdarskih pridelkov. Če se člani kmečkega gospodinjstva tako odločijo in prijavijo davčnemu organu mali obseg prve stopnje predelave, prihodki od prodaje teh izdelkov ne smejo presegati 3.500 evrov na kmečko gospodinjstvo letno. Kmetija mora kupcem izdajati račune, ki pa jih ni potrebno davčno potrjevati. Dohodek od malega obsega prve stopnje predelave lastnih kmetijskih in gozdarskih pridelkov je oproščen plačila dohodnine, če v koledarskem letu ne preseže 3.500 evrov<sup>110</sup>. Do te višine davčna osnova ostane v obsegu »osnovnega« katastrskega dohodka. Kmetija istovrstne dejavnosti ne sme opravljati kot dopolnilno dejavnost in sočasno v okviru malih obsegov predelave.

Za obravnavo dohodka iz malega obsega prve stopnje predelave kot dohodka v zvezi z osnovno kmetijsko in osnovno gozdarsko dejavnostjo je potrebna prijava na finančnem uradu do 31. marca za tekoče leto ali kadarkoli ob začetku izvajanja malega obsega predelave in velja do prijava prenehanja. Do 31. marca pa mora izvajalec malega obsega predelave predložiti zbirne podatke iz seznama izdanih računov v preteklem letu.

Zadnja sprememba Zakona o dohodnini (ZDoh-2R) je izrazito nesistemska in nelogična, saj naj bi bil dohodek iz osnovne kmetijske in gozdarske dejavnosti vključen v katastrski dohodek, ki se lastniku oziroma uporabniku kmetijskega zemljišča ali imetniku panja všteva v osnovo za dohodnino. Katastrski dohodek se odmeri glede na proizvodno sposobnost zemljišča, ki se izračuna glede na boniteto zemljišča in rastiščni koeficient gozda. Dohodki, ki se po novem vštevajo v osnovo za dohodnino, ne upoštevajo tega pravila, temveč se kmetom vštevajo v davčno osnovo pavšalno ne glede na proizvodno sposobnost zemljišča (dohodek od pridelave posebnih kultur, dohodek od predelave lastnega grozdja v vino) ali pa kmetom nalagajo nesorazmerno administrativno breme (dohodek od malih obsegov prve stopnje predelave kmetijskih pridelkov).

Zavezanci za plačilo dohodnine od osnovne kmetijske in osnovne gozdarske dejavnosti so tako:

- lastniki, zakupniki ali uporabniki kmetijskih in gozdnih zemljišč,
- lastniki ali uporabniki panjev, evidentiranih v registru čebelnjakov, in
- fizične osebe, katerim so bili v letu, na katero se obdavčitev nanaša, izplačani drugi dohodki v zvezi z opravljanjem osnovne kmetijske in osnovne gozdarske dejavnosti.

Med druge dohodke spadajo plačila iz naslova ukrepov kmetijske politike in druga plačila iz naslova državnih pomoči, prejeta v zvezi z opravljanjem osnovne kmetijske in gozdarske dejavnosti.

<sup>107</sup> Deseti odstavek 69. člena ZDoh-2.

<sup>108</sup> Tretji odstavek 8. člena ZUKD-2.

<sup>109</sup> Deseta točka 26. člena ZDoh-2.

<sup>110</sup> Deveta točka 26. člena ZDoh-2.

Katastrski dohodek se posameznemu zavezancu, članu kmečkega gospodinjstva, pripiše za zemljišča, ki jih ima pravico uporabljati. Šteje se, da ima zavezanec pravico uporabljati kmetijsko ali gozdno zemljišče, če je v zemljiški knjigi ali zemljiškem katastru vpisan kot lastnik, zakupnik ali imetnik pravice uporabe tega zemljišča<sup>111</sup>. Če zemljišče dejansko uporablja oseba, ki je član kmečkega gospodinjstva, v katerem noben član nima pravice do uporabe tega zemljišča na podlagi pravnega naslova v zemljiški knjigi in zemljiškem katastru, se za namene ZDoh-2 ta pravica pripiše dejanskemu uporabniku zemljišča na podlagi prijave dejanskega uporabnika kmetijskih in gozdnih zemljišč pri davčnem organu ali na podlagi ugotovitve davčnega organa o dejanskem uporabniku<sup>112</sup>. Katastrski dohodek se tako praviloma pripiše lastniku kmetijskega ali gozdnega zemljišča, čeprav ta dejansko ne opravlja kmetijske ali gozdarske dejavnosti, ker je zemljišče oddal v zakup. Lastnik se lahko izogne odmeri katastrskega dohodka tako, da pri davčnem organu prijavi dejanskega uporabnika kmetijskih ali gozdnih zemljišč. Prijava se izvede na predpisanem obrazcu, ki ga podpiše tudi dejanski uporabnik zemljišča.

Katastrski dohodek zemljišč, s katerimi razpolagajo člani agrarne skupnosti, skupnega pašnika ali planine, ki se štejejo za samostojno kmetijsko gospodarstvo, se posameznemu članu takega kmetijskega gospodarstva, ki je zavezanec za dohodnino od osnovne kmetijske in gozdarske dejavnosti, pripiše glede na njegov pripadajoči solastniški ali sorazmerni delež ali delež, ki ga ima v uporabi.

Davčna osnova od drugih dohodkov iz 70. člena ZDoh-2 (neposrednih plačil in državnih pomoči) se pripiše posameznemu zavezancu, članu kmečkega gospodinjstva, za katerega se šteje, da opravlja osnovno kmetijsko in gozdarsko dejavnost, v sorazmernem deležu glede na skupno število zavezancev v kmečkem gospodinjstvu. Posebna pravila veljajo za izplačila drugih dohodkov članom agrarnih skupnosti, pašnih skupnosti in planine. Tem se davčna osnova od drugih dohodkov iz 70. člena ZDoh-2 pripiše glede na njegov pripadajoči solastniški ali sorazmerni delež ali delež, ki ga ima v uporabi. Izplačevalec ne odda individualnega REK obrazca na ime fizične osebe, ki je član skupnosti, temveč za agrarno skupnost, pašno skupnost ali planino, kateri pripada izplačana kmetijska subvencija. Na letni ravni pa so izplačevalci kmetijskih subvencij dolžni poročati davčnemu organu o članih posameznih skupnostih in njihovih solastniških ali sorazmerih deležih ali deležih, ki jih imajo v uporabi. Na podlagi teh podatkov, davčni organ na letni ravni kmetijske subvencije in predhodno akontacijo dohodnine od teh dohodkov razdeli med člane posamezne skupnosti glede na njihove deleže<sup>113</sup>.

Ker se za izvajanje skupne kmetijske politike in za davčne namene uporabljata dve različni evidenci (RKG in evidenca dejanske rabe za ukrepe iz naslova skupne kmetijske politike in zemljiški kataster ter zemljiška knjiga za davčne namene), so v praksi pogoste spodaj navedene situacije:

#### 1. primer:

V kmečkem gospodinjstvu na naslovu, kjer je sedež kmetije, prebivata oče in mati. Sin, ki je nosilec kmetije, z družino prebiva na drugem naslovu. Lastnik kmetijskih in gozdnih zemljišč, ki spadajo v kmetijo, je oče. Sin je kot nosilec kmetije upravičen do neposrednih plačil, ki jih ARSKTRP nakazuje na njegov transakcijski račun. Katastrski dohodek se pripiše očetu kot zemljiškoknjižnemu lastniku kmetijskih in gozdnih zemljišč, dohodek iz drugih dohodkov (neposrednih plačil) pa sinu.

Oče se sicer lahko izogne plačilu dohodnine iz naslova katastrskega dohodka tako, da pri davčnem organu prijavi sina kot dejanskega uporabnika kmetijskih ali gozdnih zemljišč.

#### 2. primer:

Kmetijo sestavlja dvajset zemljiških parcel, od katerih jih je devetnajst v lasti nosilca kmetije, ena zemljiška parcela pa je v lasti njegove žene. Nosilec kmetije za zemljiško parcelo, ki je v lasti njegove

<sup>111</sup> Trinajsti odstavek 69. člena ZDoh-2.

<sup>112</sup> Štirinajsti odstavek 69. člena ZDoh-2.

<sup>113</sup> Pojasnilo DURS, št. 4213-238/2013-1 01-610-03, 28. 3. 2013



žene uveljavlja neposredna plačila iz naslova skupne kmetijske politike. Na istem naslovu živita še starša nosilca kmetije ter dva otroka v starosti deset in osem let. V registru kmetijskega gospodarstva so kot člani kmetijskega gospodarstva vpisani žena in starša nosilca kmetije.

Pri odmeri dohodnine se katastrski dohodek skladno s prvim odstavkom 72. člena ZDoh-2 po uradni dolžnosti pripiše nosilcu kmetije le za parcele, ki jih ima v lasti. Za parcele, ki so v lasti njegove žene, se katastrski dohodek pripiše ženi. Ženi se skladno z četrtim odstavkom 72. člena ZDoh-2 pripiše tudi polovica vseh neposrednih plačil, ki jih je prejelo kmetijsko gospodarstvo iz naslova ukrepov skupne kmetijske politike. Žena lahko na moža kot nosilca kmetije »prenese« katastrski dohodek tako, da ga pri davčnem organu prijavi kot dejanskega uporabnika kmetijskih ali gozdnih zemljišč. Ne more pa se izogniti plačilu dohodnine od sorazmernega dela neposrednih plačil, saj se davčna osnova od drugih dohodkov iz 70. člena ZDoh-2 po samem zakonu pripiše posameznemu zavezancu, članu kmečkega gospodinjstva, v sorazmernem deležu glede na skupno število zavezancev v kmečkem gospodinjstvu<sup>114</sup>. Tako sploh ni pomembno, kolikšen delež nepremičnin ima v lasti posamezen član kmečkega gospodinjstva, davčna osnova se po enakeih deležih enostavno razdeli vsem članom kmečkega gospodinjstva.

### 3. primer:

Manjši kmet se odloči, da bo opustil kmetovanje. Kmetijska zemljišča odda v uporabo drugemu kmetu, kljub temu pa še vedno sam vlaga vloge in prejema neposredna plačila za ta zemljišča. Tudi davčnemu organu ne javi spremembe dejanskega uporabnika kmetijskega zemljišča.

Manjši kmet še vedno prejema neposredna plačila. V davčno osnovo od dohodka iz osnovne kmetijske in gozdarske dejavnosti se mu skladno z trinajstim odstavkom 69. člena ZDoh-2 všteva katastrski dohodek od vseh zemljišč, ki jih ima v lasti, in skladno s šestnajstim odstavkom 69. člena ZDoh-2 tudi prejeta neposredna plačila.

### 4. primer:

Manjši kmet se odloči, da bo pustil kmetovanje. Zemljišča odda v uporabo drugemu kmetu in nanj prenese tudi plačilne pravice. Pred davčnim organom pa ne uredita prenosa pravice do uporabe kmetijskih zemljišč. Vloge za neposredna plačila na zemljišču sedaj vlaga drug kmet – uporabnik. Tudi zakupna pogodba po ZKZ, vpisana v zemljiško knjigo nima posledice, da se šteje, da je zavezanec za dohodek od kmetijstva najemnik. Manjšemu kmetu se katastrski dohodek še vedno všteva v davčno osnovo, ne prejema pa več drugih dohodkov iz kmetijske dejavnosti (neposrednih plačil) in ta se mu ne vštevajo več v davčno osnovo.

### 5. primer:

Manjši kmet se odloči, da bo pustil kmetovanje. Zemljišča odda v uporabo drugemu kmetu, kljub temu pa še vedno sam vlaga vloge in prejema neposredna plačila za ta zemljišča, saj so zemljišča ustrezno obdelana in izpolnjuje pogoje za pridobitev neposrednih plačil iz naslova ukrepov ... Ne želi pa več plačevati katastrskega dohodka, zato z uporabnikom zemljišča podpišeta izjavo o prenosu pravice do uporabe kmetijskih zemljišč in jo predložita davčnemu organu. Ker RKG in evidenca pri davčnem organu nista povezani, se manjšemu kmetu odslej katastrski dohodek ne všteva več v davčno osnovo (štirinajsti odstavek 69. člena ZDoh-2), še vedno pa prejema druge dohodke iz kmetijske dejavnosti (neposredna plačila) in ta se mu vštevajo v davčno osnovo (šestnajsti odstavek 69. člena ZDoh-2).

## 3. ZAKON O UGOTAVLJANJU KATASTRSKEGA DOHODKA

Trenutno veljavni Zakon o ugotavljanju katastrskega dohodka (ZUKD-2) je začel veljati 8. 10. 2016. ZUKD-2 ureja sistem ugotavljanja katastrskega dohodka in pavšalne ocene dohodka na čebelji panj za davčne namene in druge javne namene. Katastrski dohodek je pavšalna ocena tržnega dohodka od

<sup>114</sup> Šestnajsti odstavek 69. člena ZDoh-2, ki določa, da se pravica do uporabe zemljišča pripiše članu kmečkega gospodinjstva, v katerem noben član nima pravice do uporabe tega zemljišča na podlagi pravnega naslova v zemljiški knjigi in zemljiškem katastru ne pride v poštev, ker sta mož in žena člana istega kmečkega gospodinjstva.

dejavnosti kmetijstva in gozdarstva, ki bi ga bilo mogoče doseči s povprečno ravniyo pridelave kmetijskih in gozdarskih pridelkov na kmetijskih in gozdnih zemljiščih v Republiki Sloveniji glede na njihovo proizvodno sposobnost. Pavšalna ocena dohodka na čebelji panj pa je pavšalna ocena tržnega dohodka od dejavnosti čebelarstva, ki bi ga bilo mogoče doseči s povprečno ravniyo reje čebel v Republiki Sloveniji. Katastrski dohodek se izračuna kot razlika med tržno vrednostjo možne pridelave (tržni prihodek) in stroški. Za kmetijska zemljišča znašajo stroški 90 % tržnega prihodka, za gozdna zemljišča in čebelje panje pa 80 % tržnega prihodka.

Na podlagi ZUKD-2 katastrski dohodek in pavšalno oceno dohodka na panj vsaka tri leta ugotavlja Ministrstvo za finance za celotno slovensko gospodarstvo. Pri tem upošteva podatke iz ekonomskih izračunov za kmetijstvo in gozdarstvo za zadnjih pet let, podatke iz zemljiškega katastra in registra čebelnjakov. Katastrski dohodek za celotno slovensko gospodarstvo se deli s skupnim številom hektarjev posamezne vrste rabe zemljišč in znesek korigira glede na boniteto (kmetijska zemljišča) oziroma glede na boniteto in rastiščni koeficient (gozdna zemljišča). Pavšalna ocena dohodka na čebelji panj se izračuna tako, da se skupna ocena pavšalnega dohodka na čebelji panj deli s številom čebeljih panjev, evidentiranih v registru čebelnjakov.

Ministrstvo za finance vsaka tri leta v soglasju z Ministrstvom za kmetijstvo, gozdarstvo in prehrano pripravi predlog lestvic katastrskega dohodka, predlog odstotkov zmanjšanja katastrskega dohodka po vrstah rabe zemljišč in vrstah območij posebnih režimov za kmetovanje in gospodarjenje z gozdovi ter predlog pavšalne ocene dohodka na čebelji panj. Vlada na podlagi predloga določi lestvice katastrskega dohodka, odstotke zmanjšanja katastrskega dohodka po vrstah dejanske rabe zemljišč in vrstah območij posebnih režimov za kmetovanje in gospodarjenje z gozdovi in pavšalno oceno dohodka na čebelji panj. Katastrski dohodek in pavšalna ocena dohodka na čebelji panj se začeta pripisovati kmetijskim in gozdnim zemljiščem oziroma čebeljim panjem s 1. januarjem leta po letu objave lestvic katastrskega dohodka in pavšalne ocene dohodka na čebelji panj<sup>115</sup>.

S 1. 1. 2017 je pričela veljati nova lestvica katastrskega dohodka in pavšalne ocene dohodka na čebelji panj. V primerjavi s preteklimi leti se bo katastrski dohodek povišal, zato je v ZUKD-2 predvideno prehodno obdobje, v katerem se bo novo izračunani katastrski dohodek postopoma všteval v davčno osnovo (40 % v letu 2017, 55 % v letu 2018, 75 % v letu 2019, 100 % v letu 2020). Postopnost vštevanja katastrskega dohodka v davčno osnovo velja tudi za dodaten katastrski dohodek posebnih kultur in dodaten katastrski dohodek pridelave vina.

Glede na to, da je katastrski dohodek definiran kot pavšalna ocena tržnega dohodka od dejavnosti kmetijstva in gozdarstva, smo v naši analizi primerov skušali ugotoviti, kakšne bi bile posledice za slovenske kmetije, če bi se katastrski dohodek pripisal kmečkemu gospodinjstvu za vsa zemljišča, ki jih ima v uporabi. Analizirali smo dve kmetiji, ki se ukvarjata s prirajo mleka in eno kmetijo, ki ne opravlja kmetijske dejavnosti in vsa kmetijska zemljišča oddaja v najem. Zaradi varovanja osebnih podatkov članov kmečkih gospodinjstev smo posamezne podatke v tabeli ustrezno spremenili.

#### **a. Izračun katastrskega dohodka in dohodka iz osnovne kmetijske in osnovne gozdarske dejavnosti za kmetijo A**

**KMETIJA A** ima sedež v okolici Vrhnike in se ukvarja s prirajo mleka. Na kmetiji so na dan 31. 1. 2017 redili 32,75 GVŽ. Upravičene površine kmetijskega gospodarstva se nahajajo na območju s posebnimi omejitvami (Ljubljansko barje). V lasti nosilca kmetije je 11 parcel, pri katerih je v zemljiškem katastru vpisana dejanska raba kmetijsko zemljišče, in 13 parcel, pri katerih je v zemljiškem katastru vpisana dejanska raba gozdno zemljišče. Poleg teh ima kmetija še nekaj drugih zemljišč, ki po dejanski rabi ne sodijo med kmetijska oziroma gozdna zemljišča, zato jih pri izračunu katastrskega dohodka nismo upoštevali. Iz zemljiškega katastra smo pridobili podatek o vrsti dejanske

<sup>115</sup> 12. člen ZUKD-2.

rabe in površini posameznih parcel v lasti kmetijskega gospodarstva. Ugotovili smo, da skupna površina zemljišč v lasti kmetijskega gospodarstva znaša 28,68 ha, od tega:

Gozdna zemljišča (ha)	22,48
Kmetijska zemljišča (ha)	5,91
Vodna zemljišča (ha)	0,02
Pozidana zemljišča (ha)	0,27
Skupna površina vseh zemljišč (ha)	28,68

Za potrebe izračuna katastrskega dohodka smo v zemljiškem katastru pridobili podatke o boniteti kmetijskih in gozdnih zemljišč ter o rastiščnem koeficientu. Pri izračunu katastrskega dohodka smo upoštevali, da nekatere parcele sodijo v območja v posebnih režimov za kmetovanje in gospodarjenje z gozdovi (G\_VAR\_MP – varovalni gozdovi, za katere je v gozdnogospodarskih načrtih določen možni posek).

Izračun je pokazal, da katastrski dohodek za vsa kmetijska in gozdna zemljišča v lasti kmetijskega gospodarstva znaša:

Katastrski dohodek od gozdnih zemljišč (EUR)	828,68
Katastrski dohodek od kmetijskih zemljišč (EUR)	466,14
Katastrski dohodek skupaj (EUR)	1.294,82

Katastrski dohodek kmetijskega gospodarstva, ki se bo všteval v osnovo za dohodnino, bo tako znašal:

Koledarsko leto	%	EUR
2017	40	517,93
2018	55	712,15
2019	75	971,12
2020	100	1.294,82

Nato smo v evidenci dejanske rabe v registru kmetijskih gospodarstev pridobili podatke o vseh GERK-ih v uporabi kmetijskega gospodarstva. Iz evidence dejanske rabe smo izpisali vse parcele, ki sestavljajo posamezen GERK ter njihovo površino. V zemljiškem katastru smo pridobili podatek o boniteti, rastiščnem koeficientu in posebnih režimih na parceli. Ugotovili smo, da ima kmetijsko gospodarstvo v uporabi 28,05 ha kmetijskih zemljišč. Od tega je lastnih zemljišč le za 4,21 ha, kar je posledica tega, da se pri vrisu GERK-a izločijo površine, ki po evidenci dejanske rabe spadajo v vrsto dejanske rabe 3000 - pozidano in sorodno zemljišče in 2000 – gozd ter površine, na katerih se ne izvaja kmetijska dejavnost kot npr. zelenice okoli stavb, nezatravljene ograde, v katerih se nahajajo živali, izpusti za živali idr. Poleg tega se GERK-i ne pokrivajo v celoti z zemljiškimi parcelami (en GERK praviloma sestavlja več parcel, ena parcela pa se lahko nahaja tudi v več GERK-ih). Katastrski dohodek za vsa zemljišča v uporabi kmetijskega gospodarstva bi tako znašal:

Katastrski dohodek vseh kmetijskih zemljišč v uporabi (EUR)	1.837,90
Katastrski dohodek gozdnih zemljišč (EUR)	828,68
<b>Skupaj katastrski dohodek za vsa zemljišča v uporabi (EUR)</b>	<b>2.666,58</b>

Glede na to, da je v ZUKD-2 določeno prehodno obdobje, bi katastrski dohodek za vse površine v uporabi kmetijskega gospodarstva znašal:

Koledarsko leto	%	EUR
2017	40	1.066,63
2018	55	1.466,62
2019	75	1.999,94
2020	100	2.666,58

**b. Izračun katastrskega dohodka in dohodka iz osnovne kmetijske in osnovne gozdarske dejavnosti za kmetijo B**

**KMETIJA B** se nahaja v okolici Logatca. Lastnica je žena nosilca kmetije A. Ker je kmetija B preveč oddaljena od kmetije A, je lastnica kmetijske zemljišča oddala v zakup kmetiji C. Lastnica kmetije B za svoja kmetijska zemljišča ne vlaga zahtevkov iz naslova skupne kmetijske politike, temveč se njena kmetijska zemljišča nahajajo v GERK-ih kmetije C. Skupna površina zemljišč v lasti kmetijskega gospodarstva znaša 0,99 ha, od tega:

Gozdna zemljišča (ha)	0,61
Kmetijska zemljišča (ha)	0,30
Vodna zemljišča (ha)	0,00
Pozidana zemljišča (ha)	0,08
Skupna površina vseh zemljišč (ha)	0,99

Katastrski dohodek za vsa kmetijska in gozdna zemljišča v lasti kmetije znaša:

Katastrski dohodek od gozdnih zemljišč (EUR)	17,65
Katastrski dohodek od kmetijskih zemljišč (EUR)	24,46
Katastrski dohodek skupaj (EUR)	42,10

Katastrski dohodek kmetije, ki se bo lastnici všteval v osnovo za dohodnino, bo tako znašal:

Koledarsko leto	%	EUR
2017	40	16,84
2018	55	23,16
2019	75	31,58
2020	100	42,10

Za kmečko gospodinjstvo na kmetiji A in B smo izračunali tudi osnovo za dohodnino za leto 2016. Ker lastnica kmetije B živi na istem naslovu kot nosilec kmetije A, skladno z ZDoh-2 oba spadata v isto kmečko gospodinjstvo (ne glede na to, da se zemljišča kmetije B nahajajo v GERK-ih kmetije C). Na istem naslovu so sicer prijavljene štiri osebe, vendar sta v kmečkem gospodinjstvu le dva zavezanca za plačilo dohodnine od dohodka iz osnovne kmetijske in osnovne gozdarske dejavnosti, ker sta le dva lastnika oziroma uporabnika kmetijskih in gozdnih zemljišč. Katastrski dohodek se odmeri članoma kmečkega gospodinjstva od vseh zemljišč, ki jih imata v lasti oziroma je nanju prenesena pravica uporabe.

Kmetija A je v letu 2016 prejela 9.134,80 EUR obdavčljivih kmetijskih subvencij. Ker sta v kmečkem gospodinjstvu dva člana, se v osnovo za dohodnino vsakemu članu kmečkega gospodinjstva všteje polovica subvencij (sorazmerno s številom članov kmečkega gospodinjstva), kljub temu, da je subvencije prejel nosilec kmetije A za zemljišča, ki jih ima v uporabi kmetija A in mu je bil tudi denar nakazan na njegov transakcijski račun.

	Nosilec kmetije (EUR)	Članica kmetije (EUR)
Katastrski dohodek	517,93	16,84
Drugi dohodki	4.567,4	4.567,4
Skupaj dohodek iz osnovne kmetijske in osnovne gozdarske dejavnosti	5.085,33	4.584,24

Oba člana kmečkega gospodinjstva sta v letu 2016 prejela pokojnino iz obveznega pokojninskega in invalidskega zavarovanja (dohodek iz zaposlitve – poglavje III.2 ZDoh-2) in dohodek iz osnovne

kmetijske in gozdarske dejavnosti (poglavje III.4 ZDoh-2). Drugih obdavčljivih dohodkov zavezanca v letu 2016 nista prejela. Član kmečkega gospodinjstva (nosilec kmetije A) je v letu 2016 prejel pokojnino v skupnem znesku 6.710,68 EUR. Članica kmečkega gospodinjstva (nosilka kmetije B) je v letu 2016 prejela pokojnino v skupnem znesku 5.195,40 EUR.

Kmečko gospodinjstvo si lahko skladno z 73.a členom ZDoh-2 osnovo za dohodnino zmanjša z uveljavljanjem olajšave za investiranje v osnovno kmetijsko in gozdarsko dejavnost. Olajšava se prizna v višini 40 % zneska, vloženega v osnovna sredstva in opremo, člani kmečkega gospodinjstva pa jo uveljavljajo z računi<sup>116</sup>. Kmetijski gospodarstvi v preteklih letih nista vlagali v razvoj, zato se zavezancema ne prizna olajšava za dohodnino.

Dohodek iz osnovne kmetijske in gozdarske dejavnosti, ki se vštevja v davčno osnovo za dohodnino, je v letu 2016 za moža tako znašal 5.085,33 EUR, za ženo pa 4.584,24 EUR. Od neto letne davčne osnove se odštevajo prispevki za socialno varnost - teh zavezanca nista plačevala, saj sta v pokoju. V kmečkem gospodinjstvu tudi ni vzdrževanih članov. Zavezancema se prizna splošna olajšava po 111. člena ZDoh-2 ter osebna olajšava v višini 13,5 % pokojnine skladno s tretjim odstavkom 112. člena ZDoh-2. Skupaj davčne olajšave znašajo 7.221,20 EUR oziroma 8.541,70 EUR. Zavezanca bosta tako v letu 2016 plačala skupaj 930,04 EUR dohodnine.

<b>IZRAČUN DOHODNINE ZA LETO 2016 - ČLANICA KMEČKEGA GOSPODINJSTVA - NOSILKA KMETIJE B</b>	
DOHODEK IZ ZAPOSLOTITVE (pokojnina)	5.195,40
Dohodek iz osnovne kmetijske in gozdarske dejavnosti (katastrski dohodek + plačila iz naslova ukrepov SKP)	4.584,24
Olajšava za investiranje (73.a člen ZDoh-2)	0,00
<b>SKUPAJ DOHODEK IZ OSNOVNE KMETIJSKE IN GOZDARSKE DEJAVNOSTI</b>	<b>4.584,24</b>
<b>SKUPNI DOHODEK</b>	<b>9.779,64</b>
<b>NETO LETNA DAVČNA OSNOVA</b>	<b>9.779,64</b>
Prispevki za socialno varnost	
Splošna olajšava (prvi odstavek 111. člena ZDoh-2)	3.302,70
Splošna olajšava (drugi odstavek 111. člena ZDoh-2)	3.217,12
Splošna olajšava (tretji odstavek 111. člena ZDoh-2)	
Osebna olajšava - 13,5 % pokojnine (tretji odstavek 112. člena ZDoh-2)	701,38
Posebna osebna olajšava (113. člen ZDoh-2)	0,00
Posebna olajšava (114. člen ZDoh-2)	0,00
Olajšava za prostovoljno dodatno pokojninsko zavarovanje (117. člen ZDoh-2)	0,00
<b>SKUPAJ DAVČNE OLAJŠAVE</b>	<b>7.221,20</b>
<b>OSNOVA ZA DOHODNINO</b>	<b>2.558,44</b>
<b>DOHODNINA Z VSEMI OLAJŠAVAMI</b>	<b>409,35</b>

<b>IZRAČUN DOHODNINE ZA LETO 2016 – ČLAN KMEČKEGA GOSPODINJSTVA - NOSILEC KMETIJE A</b>	
DOHODEK IZ ZAPOSLOTITVE (pokojnina)	6.710,68
Dohodek iz osnovne kmetijske in gozdarske dejavnosti (katastrski dohodek + plačila iz naslova ukrepov SKP)	5.085,33
Olajšava za investiranje (73.a člen ZDoh-2)	0,00

<sup>116</sup> 73.a člen ZDoh-2; Olajšave sicer ni mogoče uveljavljati za vlaganja v nakup zemljišč, nakup ali gradnjo stavb ter za nakup motornih vozil (z izjemo traktorjev in druge kmetijske in gozdarske mehanizacije).



SKUPAJ DOHODEK IZ OSNOVNE KMETIJSKE IN GOZDARSKE DEJAVNOSTI	5.085,33
SKUPNI DOHODEK	11.796,01
NETO LETNA DAVČNA OSNOVA	11.796,01
Prispevki za socialno varnost	1.115,94
Splošna olajšava (prvi odstavek 111. člena ZDoh-2)	3.302,70
Splošna olajšava (drugi odstavek 111. člena ZDoh-2)	3.217,12
Splošna olajšava (tretji odstavek 111. člena ZDoh-2)	
Osebnolajšava - 13,5 % pokojnine (tretji odstavek 112. člena ZDoh-2)	905,94
Posebna osebnolajšava (113. člen ZDoh-2)	0,00
Posebna olajšava (114. člen ZDoh-2)	0,00
Olajšava za prostovoljno dodatno pokojninsko zavarovanje (117. člen ZDoh-2)	0,00
SKUPAJ DAVČNE OLAJŠAVE	8.541,70
OSNOVA ZA DOHODNINO	3.254,31
DOHODNINA Z VSEMI OLAJŠAVAMI	520,69

Iz izračuna dohodnine za oba člana kmečkega gospodinjstva sta razvidni dve značilnosti slovenske davčne ureditve. Prva značilnost je, da se v dohodek iz osnovne kmetijske in osnovne gozdarske dejavnosti všteva katastrski dohodek od zemljišč, ki jih imajo v lasti člani kmečkega gospodinjstva ne glede na to, ali ta kmetijska zemljišča tudi obdelujejo ali ne. V konkretnem primeru se vse kmetijske parcele, ki pripadajo nosilki kmetije B nahajajo v GERK-ih kmetije C, ki tudi prejema neposredna plačila za opravljanje kmetijske dejavnosti na teh površinah. Katastrski dohodek se ne glede na to obračuna lastnici, ki živi in dela na drugi kmetiji. Druga značilnost pa je, da se drugi dohodki (kmetijske subvencije) všteva v davčno osnovo dohodka iz osnovne kmetijske dejavnosti zavezancem sorazmerno glede na število članov kmečkega gospodinjstva, ne glede na to, kdo je dejanski prejemnik teh subvencij. Takšna ureditev po našem mnenju ni ustrezna – bolje bi bilo, da bi se drugi dohodki vštevali v osnovo za dohodnino tistemu članu kmečkega gospodinjstva, ki je njihov dejanski prejemnik.

**c. Izračun katastrskega dohodka in dohodka iz osnovne kmetijske in osnovne gozdarske dejavnosti za kmetijo C**

**KMETIJA C** se nahaja v okolici Logatca in se ukvarja s prirejo mleka. Na kmetiji so na dan 31. 1. 2017 redili 25,45 GVŽ. Vse upravičene površine kmetijskega gospodarstva se nahajajo na območju s posebnimi omejitvami (višinsko območje). V lasti nosilca kmetije je 17 parcel, pri katerih je v zemljiškem katastru vpisana dejanska raba kmetijsko zemljišče, in 16 parcel, pri katerih je v zemljiškem katastru vpisana dejanska raba gozdno zemljišče. Poleg teh ima kmetija še 10 zemljišč, ki po dejanski rabi delno ali v celoti sodijo med pozidana zemljišča, zato jih pri izračunu katastrskega dohodka nismo upoštevali.

Iz zemljiškega katastra smo pridobili podatek o vrsti dejanske rabe in površini posameznih parcel v lasti kmetijskega gospodarstva. Ugotovili smo, da skupna površina zemljišč v lasti kmetijskega gospodarstva znaša 45,78 ha, od tega:

Gozdna zemljišča (ha)	28,18
Kmetijska zemljišča (ha)	16,68
Vodna zemljišča (ha)	0,00
Pozidana zemljišča (ha)	0,92
Skupna površina vseh zemljišč (ha)	45,78

Za potrebe izračuna katastrskega dohodka smo v zemljiškem katastru pridobili podatke o boniteti kmetijskih in gozdnih zemljišč ter o rastiščnem koeficientu. Nobena od parcel ne sodi v območje posebnih režimov za kmetovanje in gospodarjenje z gozdovi.

Izračun je pokazal, da katastrski dohodek za vsa kmetijska in gozdna zemljišča v lasti kmetijskega gospodarstva znaša:

Katastrski dohodek od gozdnih zemljišč (EUR)	1.044,00
Katastrski dohodek od kmetijskih zemljišč (EUR)	1.447,83
Katastrski dohodek skupaj (EUR)	2.491,84

Katastrski dohodek kmetijskega gospodarstva, ki se bo všteval v osnovo za dohodnino, bo tako znašal:

Koledarsko leto	%	EUR
2017	40	996,73
2018	55	1.370,51
2019	75	1.868,88
2020	100	2.491,84

Nato smo v evidenci dejanske rabe v registru kmetijskih gospodarstev pridobili podatke o vseh GERK-ih v uporabi kmetijskega gospodarstva. Ugotovili smo, da ima kmetijsko gospodarstvo v uporabi 19,55 ha kmetijskih zemljišč. Od tega je lastnih zemljišč za 15,79 ha (pri vrisu GERK-a se izločijo nezatravljene površine, gozd, ceste). Katastrski dohodek za vsa zemljišča v uporabi kmetijskega gospodarstva bi tako znašal:

Katastrski dohodek vseh kmetijskih zemljišč v uporabi (EUR)	1.699,14
Katastrski dohodek gozdnih zemljišč (EUR)	1.044,00
Skupaj katastrski dohodek za vsa zemljišča v uporabi (EUR)	2.743,14

Glede na to, da je v ZUKD-2 določeno prehodno obdobje, bi katastrski dohodek za vse površine v uporabi kmetijskega gospodarstva znašal:

Koledarsko leto	%	EUR
2017	40	1.097,26
2018	55	1.508,73
2019	75	2.057,36
2020	100	2.743,14

Za kmetijo C smo izračunali tudi osnovo za dohodnino za leto 2017. Na kmetiji C je le en član kmečkega gospodinjstva zavezan za plačilo dohodnine od dohodka iz osnovne kmetijske in osnovne gozdarske dejavnosti. Na naslovu, na katerem živi nosilec kmetije, prebivajo namreč štiri osebe, od katerih je le nosilec kmetije lastnik oziroma uporabnik zemljišč in edini prejema druge dohodke iz naslova osnovne kmetijske in osnovne gozdarske dejavnosti (plačila iz naslova ukrepov kmetijske politike). Zavezanec je v letu 2016 prejemal pokojnino iz obveznega pokojninskega in invalidskega zavarovanja (dohodek iz zaposlitve – poglavje III.2 ZDoh-2) in dohodek iz osnovne kmetijske in gozdarske dejavnosti (poglavje III.4 ZDoh-2). Drugih obdavčljivih dohodkov zavezanec v letu 2016 ni prejel.

Nosilec kmetije je v letu 2016 prejel pokojnino v skupnem znesku 5.534,32 EUR. Prejel je tudi 6.515,97 EUR dohodka iz osnovne kmetijske in osnovne gozdarske dejavnosti. Pri izračunu dohodka iz osnovne kmetijske in gozdarske dejavnosti smo upoštevali, da je v letu 2016 prejel 5.519,24 EUR dohodka iz naslova obdavčljivih kmetijskih subvencij. Katastrski dohodek se je odmeril od vseh parcel v lasti nosilca kmetijskega gospodarstva in za potrebe tega izračuna znaša 996,73 EUR (toliko kot za

leto 2017). Nosilec kmetije namreč ni pri nobeni tuji parceli vpisan kot uporabnik zemljišča. Skladno z 73.a členom ZDoh-2 se zavezancu (nosilcu kmetije) prizna olajšava za vlaganje sredstev v osnovna sredstva in opremo v povezavi z osnovno kmetijsko in osnovno gozdarsko dejavnostjo, saj je kmetijsko gospodarstvo v preteklih letih intenzivno vlagalo sredstva v nakup novih strojev in hlevske opreme, zato se zavezancu iz tega naslova prizna olajšava za investiranje v višini 5.130,79 EUR (40 % vloženega zneska, pri čemer lahko neizkoriščen del olajšave lahko zmanjšuje davčno osnovo še v naslednjih petih letih po letu vlaganja). Dohodek iz osnovne kmetijske in gozdarske dejavnosti, ki se vštevja v davčno osnovo za dohodnino, je v letu 2016 tako znašal 1.385,18 EUR. Od neto letne davčne osnove se odštevajo prispevki za socialno varnost - teh nosilec kmetije ni plačeval, saj je v pokoju. Plačeval pa je prispevke za socialno varnost za sina, ki dela na kmetiji in je prostovoljno zavarovan kot kmet, vendar se nosilcu kmetije za te prispevke ne prizna olajšava. Nosilcu kmetije se prizna splošna olajšava po prvem in drugem odstavku 111. člena ZDoh-2 ter osebna olajšava v višini 13,5 % pokojnine skladno s tretjim odstavkom 112. člena ZDoh-2. Skupaj davčne olajšave znašajo 7.266,96 EUR in presegajo osnovo za dohodnino, kar pomeni, da nosilec za leto 2016 ne bo plačal dohodnine.

IZRAČUN DOHODNINE ZA LETO 2016	
DOHODEK IZ ZAPOSLOTITVE (pokojnina)	5.534,32
Dohodek iz osnovne kmetijske in gozdarske dejavnosti (katastrski dohodek + plačila iz naslova ukrepov SKP)	6.515,97
Olajšava za investiranje (73.a člen ZDoh-2)	5.130,79
SKUPAJ DOHODEK IZ OSNOVNE KMETIJSKE IN GOZDARSKE DEJAVNOSTI	1.385,18
SKUPNI DOHODEK	6.919,50
NETO LETNA DAVČNA OSNOVA	6.919,50
Prispevki za socialno varnost	
Splošna olajšava (prvi odstavek 111. člena ZDoh-2)	3.302,70
Splošna olajšava (drugi odstavek 111. člena ZDoh-2)	3.217,12
Splošna olajšava (tretji odstavek 111. člena ZDoh-2)	
Osebna olajšava - 13,5 % pokojnine (tretji odstavek 112. člena ZDoh-2)	747,14
Posebna osebna olajšava (113. člen ZDoh-2)	
Posebna olajšava (114. člen ZDoh-2)	
Olajšava za prostovoljno dodatno pokojninsko zavarovanje (117. člen ZDoh-2)	
SKUPAJ DAVČNE OLAJŠAVE	7.266,96
OSNOVA ZA DOHODNINO	-347,46
DOHODNINA Z VSEMI OLAJŠAVAMI	-55,59

#### 4. ZAKON O DAVKU NA DODANO VREDNOST

DDV je ena izmed oblik davka na promet, med katere spadajo tudi davek na promet motornih vozil in davek na promet z nepremičninami. Predmet obdavčitve z DDV so dobave blaga, ki jih davčni zavezanec opravi v okviru opravljanja svoje ekonomske dejavnosti na območju Republike Slovenije za plačilo, pridobitve blaga znotraj Unije, opravljanje storitev, ki jih davčni zavezanec opravi v okviru opravljanja svoje ekonomske dejavnosti na ozemlju Slovenije za plačilo in uvoz blaga<sup>117</sup>.

Davčni zavezanec je vsaka oseba, ki kjerkoli neodvisno opravlja katerokoli ekonomsko dejavnost, ne glede na namen ali rezultat opravljanja dejavnosti<sup>118</sup>. Ekonomska dejavnost obsega vsako proizvodno, predelovalno, trgovsko in storitveno dejavnost, vključno z rudarsko, kmetijsko in poklicno

<sup>117</sup> Prvi odstavek 3. člena ZDDV-1.

<sup>118</sup> Prvi odstavek 5. člena ZDDV-1.



dejavnostjo. Ekonomska dejavnost obsega tudi izkoriščanje premoženja in premoženjskih pravic, če je namenjeno trajnemu doseganju dohodka<sup>119</sup>. Davčni zavezanci se skladno z ZDDV-1 delijo na davčne zavezance, identificirane za namene DDV, in male davčne zavezance.

#### **a. Mali davčni zavezanci**

Mali davčni zavezanec je predstavnik kmečkega gospodinjstva pri katerem dohodek iz osnovne kmetijske in gozdarske dejavnosti ne presega 7.500 EUR za zadnje koledarsko leto. Za male davčne zavezance velja skladno z ZDDV-1 posebna ureditev – pavšalno nadomestilo. Mali davčni zavezanec ima ob dobavi kmetijskih in gozdarskih pridelkov ter kmetijskih in gozdarskih storitev, ki so rezultat osnovne kmetijske in osnovne gozdarske dejavnosti, pravico do pavšalnega nadomestila DDV. Davčni zavezanci – kupci blaga oziroma naročniki storitev, so dolžni plačilu za opravljeno dobavo prišteti znesek pavšalnega nadomestila v višini 8% od odkupne vrednosti. Mali davčni zavezanec tako ob prodaji doseže višjo ceno. Pavšalno nadomestilo pa je mogoče uveljaviti le za dobavo kmetijskih in gozdarskih pridelkov ter kmetijskih storitev in storitev za gozdarstvo, ki so navedene v Prilogi XII k Pravilniku o izvajanju Zakona o davku na dodano vrednost in pod pogoji, določenimi s tem pravilnikom. Kot pogoj za izdajo dovoljenja je npr. določeno, da morajo člani kmečkega gospodinjstva imeti v uporabi vsaj 1 ha kmetijskega zemljišča, 10 čebeljih panjev ali 0,3 ha vinogradov ipd. Za pridobitev pravice do uveljavljanja pavšalnega nadomestila mora mali davčni zavezanec pridobiti dovoljenje davčnega organa. Dovoljenje velja do poteka koledarskega leta, za katero je bilo izstavljeno. Imetnik dovoljenja mora po poteku koledarskega leta sestaviti obračun pavšalnega nadomestila za obdobje veljavnosti dovoljenja v posameznem letu in ga predložiti davčnemu organu v elektronski obliki do 31. januarja naslednjega leta. Če imetnik dovoljenja izpolnjuje vse pogoje, mu davčni organ po uradni dolžnosti podaljša veljavnost dovoljenja še za eno leto.

#### **b. Davčni zavezanci, identificirani za namen DDV**

Član kmečkega gospodinjstva, ki dobavlja blago in storitve v okviru osnovne kmetijske in gozdarske dejavnosti, vstopi v sistem DDV, če katastrski dohodek vseh članov kmečkega gospodinjstva za zadnje koledarsko leto presega 7.500 EUR. Čeprav ZDDV-1 govori o katastrskem dohodku, je Pravilnik o izvajanju Zakona o davku na dodano vrednost določil, da se kot katastrski dohodek štejejo vsi dohodki v zvezi z osnovno kmetijsko in osnovno gozdarsko dejavnostjo na kmečkem gospodinjstvu, kot jih določa zakon, ki ureja dohodnino<sup>120</sup>.

Davčni organ po uradni dolžnosti izda identifikacijsko številko za DDV tistemu davčnemu zavezancu v okviru kmečkega gospodinjstva, ki ima med člani kmečkega gospodinjstva najvišji katastrski dohodek<sup>121</sup>. Predstavnik kmečkega gospodinjstva bo identificiran za DDV za vse dejavnosti, katerih nosilec je (torej tudi za dopolnilno dejavnost na kmetiji ter drugo kmetijsko ali nekmetijsko dejavnost, katere nosilec je<sup>122</sup>). Polnoletni člani kmečkega gospodinjstva se lahko tudi drugače dogovorijo in za identifikacijo DDV določijo drugega člana kmečkega gospodinjstva. Tu se postavi vprašanje, koga šteti za člana kmečkega gospodinjstva<sup>123</sup>.

<sup>119</sup> Drugi odstavek 5. člena ZDDV-1.

<sup>120</sup> 160. člen Pravilnika o izvajanju Zakona o davku na dodano vrednost (Uradni list RS, št. 141/06 in naslednji).

<sup>121</sup> Vprašanje je, ali je tu mišljen katastrski dohodek ali dohodek iz osnovne kmetijske in osnovne gozdarske dejavnosti.

<sup>122</sup> Vprašanje je, ali tu gre za vse dejavnosti, za katere je član kmečkega gospodinjstva registriran v AJPES (npr. samostojni podjetnik, dopolnilna dejavnost na kmetiji, osebno dopolnilno delo, samostojni raziskovalec, sobodajalec, samozaposleni v kulturi, odvetnik, notar, idr.).

<sup>123</sup> Drugi odstavek 69. člena ZDoh-2 določa: Člani kmečkega gospodinjstva so vse fizične osebe, člani enega ali več gospodinjstev, evidentiranih na istem naslovu, ki so na dan 30. junija v davčnem letu po predpisih o prijavi prebivališča stalno ali začasno prijavljene na tem naslovu, niso najeta delovna sila ter se za vsaj enega ali več

Davčni zavezanec se lahko tudi prostovoljno vključi v sistem DDV. V tem primeru mora v sistemu DDV ostati najmanj 60 mesecev. Ker dohodek iz dopolnilne dejavnosti na kmetiji oziroma druge kmetijske ali nekmetijske dejavnosti skladno ZDoh-2 ne sodi med dohodke iz osnovne kmetijske in osnovne gozdarske dejavnosti, se predstavnik kmečkega gospodinjstva lahko identificira za DDV tudi samo v okviru dopolnilne dejavnosti na kmetiji oziroma druge kmetijske ali nekmetijske dejavnosti, kmečko gospodinjstvo pa še naprej uveljavlja pravico do pavšalnega nadomestila, če dohodek iz osnovne kmetijske in osnovne gozdarske dejavnosti v okviru kmečkega gospodinjstva ne presega 7.500 EUR.

Kmečka gospodinjstva, ki so v letu 2015 dosegla 7.500 EUR skupnega dohodka iz osnovne kmetijske in osnovne gozdarske dejavnosti so konec leta 2016 prejela obvestilo, da se morajo vključiti v sistem DDV. Za namene DDV je tako obvezno identificiranih 1.279 kmetij, od tega se jih je moralo konec leta 2016 na novo vključiti 789<sup>124</sup>.

Poziv za vstop v sistem DDV je konec leta 2016 prejela tudi **kmetija A**. Vstop v sistem DDV za člane kmečkega gospodinjstva predstavlja predvsem administrativno obremenitev, saj bodo odslej dolžni voditi knjigo prejetih in izdanih računov. Kmetija A ne bo več upravičena do pavšalnega nadomestila DDV, temveč bo lahko zahtevala vračilo DDV na podlagi obračuna DDV. Glede tega bo kmetija A odslej v slabšem položaju, saj ima veliko površin v zakupu. Zakupnine so na podlagi 44. člena ZDDV-1 oproščene plačila DDV, kar pomeni, da kmetija A za plačane zakupnine ne bo mogla uveljavljati odbitka DDV in se ji bo iz tega naslova povečalo davčno breme.

**Kmetija C** je že več let identificirana za namene DDV. V sistem DDV je kmetija C prostovoljno vstopila v letu 2008. Za namen DDV je identificiran nosilec kmetijskega gospodarstva. Sistem DDV kmetijo spodbuja k investiranju in vlaganju v kmetijske stroje, opremo in stavbe, obenem pa članom kmečkega gospodinjstva omogoča tudi pregled nad finančnim stanjem kmetije.

### c. Izdajanje računov

Davčni zavezanci, identificirani za namen DDV, so dolžni izdajati račune za vse dobave blaga ali storitev. Račun lahko v njihovem imenu ob predpisanih pogojih izda tudi kupec blaga ali naročnik storitev ali tretja oseba. Skladno z ZDDV-1 lahko izdajo poenostavljeni račun za opravljeno dobavo ali storitev na ozemlju Slovenije, če:

- so jo opravili drugemu davčnemu zavezancu ali pravni osebi, ki ni davčni zavezanec, ter za predplačila, prejeta od katere izmed teh oseb in znesek na računu, brez DDV, ni višji od 100 EUR,
  - so jo opravili končnemu potrošniku ali
  - izdajo dokument oziroma sporočilo, ki spreminja prvoten račun in se nanj nedvoumno nanaša.
- Če davčni zavezanci, identificirani za DDV, poslujejo z gotovino, so dolžni spoštovati tudi določila Zakona o davčnem potrjevanju računov<sup>125</sup>.

Mali davčni zavezanci so prav tako načeloma dolžni izdajati račune, vendar jim ni treba predložiti obračuna DDV davčnemu organu. Mali davčni zavezanci so oproščeni obveznosti izdajanja računov, kadar opravljajo dobavo kmetijskih in gozdarskih pridelkov in storitev v okviru osnovne kmetijske in osnovne gozdarske dejavnosti končnemu potrošniku (npr. neposredna prodaja na domu, prodaja od vrat do vrat, neposredna prodaja na premičnih stojnicah, na tržnicah) ali za lastno rabo v okviru

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članov kmečkega gospodinjstva šteje, da opravljajo osnovno kmetijsko in osnovno gozdarsko dejavnost, in njihov skupni dohodek iz osnovne kmetijske in osnovne gozdarske dejavnosti znaša najmanj 200 evrov.

<sup>124</sup> <http://www.kgzs.si/GV/Aktualno/V-srediscu/Novica/ArticleId/3349/Stevilne-resitve-v-davcni-in-socialni-zakonodaji-za-KGZS-nesprejemljive.aspx>

<sup>125</sup> Zakon o davčnem potrjevanju računov (Uradni list RS, št. 57/15).

kmečkega gospodinjstva davčnega gospodinjstva. Račune so dolžni izdajati tudi nosilci dopolnilnih dejavnosti na kmetiji ne glede na to, ali so identificirani za DDV ali ne.

## 5. SKLEPNE UGOTOVITVE

Primerjalni izračun katastrskega dohodka je pokazal, da bi odmera katastrskega dohodka na podlagi evidence dejanske rabe (GERK) povzročila povečanje katastrskega dohodka pri tistih kmetijah, ki imajo v uporabi tuje površine. To so praviloma ravno tiste kmetije, ki so gonilo razvoja v kmetijstvu in jim kmetijska dejavnost predstavlja osnovo za preživetje. Po drugi strani pa bi se kmetijam, ki oddajo svoja kmetijska zemljišča v zakup, katastrski dohodek znižal. Ocenjujemo, da bi se zmanjšalo število kmečkih gospodinjstev, ki bi presegla prag 200 evrov dohodka iz osnovne kmetijske in gozdarske dejavnosti, povečala pa bi se obremenitev večjih kmetij, ki se dejansko ukvarjajo s kmetijsko in gozdarsko dejavnostjo. Ker te kmetije praviloma vlagajo v razvoj, bi si z investicijskimi olajšavami lahko bolj znižale osnovo za dohodnino kot manjše kmetije, ki sedaj plačujejo katastrski dohodek od zemljišč v lasti, ne ukvarjajo pa se s kmetijsko in gozdarsko dejavnostjo, kar pomeni, da bi se priliv sredstev v proračun RS najverjetneje nekoliko zmanjšal. Odmera katastrskega dohodka na podlagi evidence dejanske rabe je problematična, saj se pri izrisu GERK-a izločijo površine, na katerih se ne izvaja kmetijska dejavnost.

Vprašanje je, komu bi se odmeril katastrski dohodek za tiste dele zemljiških parcel, na katerih se ne opravlja kmetijska dejavnost in so izločene iz GERK-a. Za ta del zemljiške parcele bi se katastrski dohodek praviloma še vedno odmeril zemljiškoknjižnemu lastniku. Takšen način odmere katastrskega dohodka bi sicer bolj odražal dejansko stanje (v Sloveniji se le še zelo majhen delež prebivalstva dejansko ukvarja s kmetijsko in gozdarsko dejavnostjo in s tem ustvarja dohodek), prednost obstoječega načina odmere katastrskega dohodka pa je preprostost izračuna. To zavezancem daje tudi potrebno pravno varnost, saj brez večjih težav preverijo pravilnost odmere katastrskega dohodka. Menimo, da je prav zato v zvezi s pripisovanjem katastrskega dohodka in odmero dohodnine iz osnovne kmetijske in gozdarske dejavnosti sorazmerno malo sodne prakse.

Trenutna zakonska rešitev, ki lastnikom kmetijskih in gozdnih zemljišč omogoča, da v dogovoru z zakupnikom in prijavo pri davčnem organu prenesejo katastrski dohodek na dejanskega uporabnika, je po našem mnenju ustrezna, saj lastnikom, zakupnikom in uporabnikom kmetijskih in gozdnih zemljišč omogoča potrebno fleksibilnost. Ni pa ustrezna zakonska rešitev glede drugih dohodkov (plačil iz naslova skupne kmetijske politike in drugih plačil iz naslova državnih pomoči). Le-ta se vštevajo v davčno osnovo dohodka iz osnovne kmetijske dejavnosti zavezancem sorazmerno glede na število članov kmečkega gospodinjstva. Bolj enostavno bi bilo, da bi se drugi dohodki všteli v davčno osnovo za dohodnino tistemu članu kmečkega gospodinjstva, ki je njihov dejanski prejemnik.

Ker se za izvajanje skupne kmetijske politike in za davčne namene uporabljata dve različni evidenci (RKG za ukrepe iz naslova skupne kmetijske politike in zemljiški kataster ter zemljiška knjiga za davčne namene), v praksi prihaja do tega, da so iste osebe v enakih ali primerljivih dejanskih okoliščinah povsem različno obravnavane. Oseba, ki je v RKG vpisana kot član kmetije se namreč pogosto ne šteje za člana kmečkega gospodinjstva. Po drugi strani pa se fizična oseba, ki ima na določenem naslovu prijavljeno stalno ali začasno prebivališče, po uradni dolžnosti šteje med člane kmečkega gospodinjstva, čeprav z nosilcem kmetije in njegovimi družinskimi člani ni sorodstveno ali kako drugače povezana. Tej osebi davčni organ v osnovo za dohodnino po uradni dolžnosti všteje sorazmerni del drugih dohodkov, ki so jih prejeli člani kmečkega gospodinjstva že na podlagi dejstva, da je npr. lastnik ali zakupnik enega samega kmetijskega ali gozdnega zemljišča.

Potrebno bi bilo razmisliti o poenotenju evidenc npr. tako da se med člane kmečkega gospodinjstva štejejo le osebe, ki prebivajo v istem gospodinjstvu oziroma vse osebe, ki so vpisane kot člani kmetije v RKG.

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## **Mapping of Facility management maturity profiles in Norwegian Universities and University colleges**

Kawtar Sallah

Student at Norwegian university of Life Science, Norway

E-mail: kawtar.sallah@nmbu.no

Svein Bjørberg

Multiconsult ASA, Norway

E-mail: svein.bjoerberg@multiconsult.no

Alenka Temeljotov Salaj

Oslo and Akershus University College of Applied Sciences, Norway

alenka.temeljotov-salaj@ntnu.no

### **Abstract**

The purpose of this research is to identify and measure FM performance and maturity in the Norwegian Universities and University colleges regarding: strategy, standards and policies, financial planning, investment appraisal, provision of service, organizational maturity and handling of data. This research is a case study with the combination of a qualitative and quantitative research method. The backgrounds of the organizational structure in the universities and university colleges, which participate in the research, are given. 11 (44%) of 25 (100%) heads of FM units answered the assessment. The data collected was analyzed and compared with the FM maturity matrix levels and the theoretical literature review of the important FM key performance indicators. The FM maturity matrix used in this study provides some good guidelines and expertise. The findings reveal the presence of FM strategies in universities and university colleges in Norway. The FM organization may not be fully integrated and communicated with the core business and the property owners. Most of the heads of FM units are aware of a need to develop better property and FM services integration to contribute creating values for the building's owners and users through its lifetime. Some of the found lack of FM standards and policies understanding and implementation in these organizations, but it's expected to improve. The FM performance management in most of these institutions is still based on the user complaints. Measuring PM and the use of FM technologies are also limited. The misunderstanding of the FM role in some institutions is spotted, as some of the heads deal with Property management responsibilities. The Maturity mapping model shows the potential, but it should be prepared more specifically for the Norwegian FM practices and work environment.

**Keywords:** Facility Management, Facility Services, Performance management, Facility management strategy, FM maturity matrix.

## 1. INTRODUCTION

“Facility management (FM) is a profession that involves multiple disciplines and routines to ensure the functionality of the building and the built environment, by integrating people, place, processes and technology” (Atkin & Brooks, 2009, p.4). FM provides supportive services to the core businesses in the companies, such as infrastructure maintenance, improvement and adaptation, building operations and equipment repair, etc. FM can deliver significant benefits to the core business if FM and property managers are willing to create and implement strategies that give more value to the building and business. At the same time, the lack of buildings technical functionality and standard will affect both environmental and social issues and value aspects. Because buildings that are poorly managed increase maintenance and upgrading needs and cost. (Bjørberg, Larssen, Temeljotov, Boge, 2016).

### The FM maturity matrix

To improve the buildings value and develop property management industry in Norway, a project called “Oscar-value for owners and users” was initiated by Multiconsult AS, which is one of the leading engineering companies in planning and consulting. The company’s main business areas are property, industry, energy, environment and natural resources (Multiconsult, 2015). The Oscar-value projects aim is to develop knowledge, methods and analytical tools that enable the optimization of the building design and contribute to creating values for the building’s owners and users through its lifetime (Oscarvalue, 2016).

Amount the analytical tools that can help organizations achieve Excellence, is to identify the position of FM, the gaps and what kind of tools and strategies these organizations need to implement to reach property management best practice and effectiveness. Josef Czerny’s European high level FM maturity profile matrix, is one of these tools that was developed for this purpose and have been used to measure the maturity and performance of FM in organizations, regarding: strategy, standards and policies, financial planning, service provision, performance management and organizational maturity (Larsen, 2011).

#### The maturity profiles allow to:

- Identify the key requirements for a successful FM organization.
- Assess the present position of an FM organization against the best practice.
- Compare FM organizations with the help of a maturity profile.
- Identifies best practices in FM at the strategic level in different industries from the supply and the demand sides.
- Compares existing practices in FM at the strategic level in different industries.
- Identifies gaps in different industries from the demand and the supply sides.
- Delivers data for developing strategic plan based on the findings.
- FM organization can follow, document and evaluate the changes in the FM organization, to get to the best practice processes (Larssen, 2011).

The FM maturity matrix mentioned above was applied in four companies as part of a project task by Property management and development NTNU students, in order to measure the maturity levels of FM in Norwegian organizations. The research results main conclusions show that FM is unknown in the Norwegian organizations, because people that were interviewed were not FM-oriented. The research questions were also ignored or considered as irrelevant because of the lack of FM-knowledge (Multiconsult, 2012). The paper intention is to get more information and to examine more closely FM maturity and performance in the Norwegian organizations.

## 2. BACKGROUND OF THE RESEARCH AND THEORITICAL BACKGROUND

Facility management is rapidly changing due to the changing business environment that represents new demands of competences and skills to meet the core business needs. Forces such as increased



globalisation, rapid technological innovation and the customisation of products and services, are considered major influences on world markets and the nature of business enterprises (Booty, 2009, p. xxiii). The business of FM will also be more flexible and more streamlined as before and facility managers will need communication and new variety of skills (Booty, 2009, p. xxiii).

The purpose of this research is a request from Oscar-value organization to analyze and measure FM maturity models in Norwegian Universities and University colleges.

The present study adopts FM industry performance effectiveness for the demand and the supply sides in organizations, and aims to map and examine the FM maturity levels in public institutions in Norway. There are two questions addressed:

- What are the present and expected FM maturity profiles levels in Universities and University colleges using the FM assessment?
- What are the FM gaps and pitfalls in these organizations using the FM assessment model?

The research will advance and progress in the area of the identification, and comparison of FM maturity profiles levels (present and expected situation) in public Universities and University colleges by using the FM maturity matrix. This will shed light on what kind of competences FM employees need, in order to manage facilities effectively.

FM concept in Norway is relatively new, which means it is important to review relevant theories of FM approaches, strategy and functions for FM key performance indicators that support the FM maturity matrix. This will provide a solid foundation for the paper.

### Facility management

NS-EN15221-1 (2007) defined FM as “integration of processes within an organization to maintain and develop the agreed services which support and improve the effectiveness of its primary activities”. According to Sæboe and Blakstad (2009, p.4,30.42) FM is generally used to coordinate assets and services, using management skills, service level agreements (SLA) and Benchmarking to handle the changes in the organization's environment.

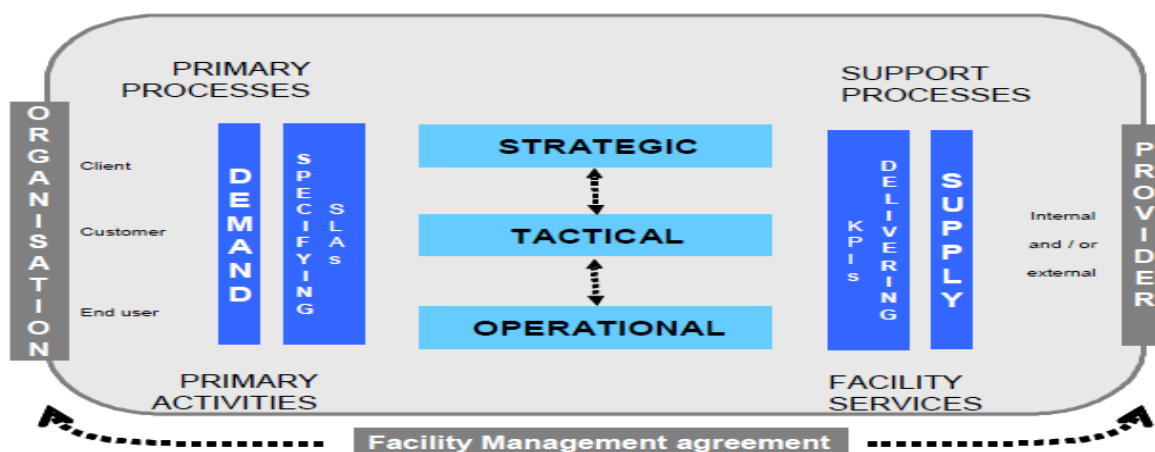


Figure A.1-Facility management model. (NS-EN 1522-1, p.7)

### FM strategies

To discuss whether Universities and University colleges have an FM strategy, I took a close look at the theoretical FM strategies. Atkin and Brooks (2009, p.14-15) mentioned that robust FM strategies have to be developed in order to manage facilities efficiently. The strategic analysis should focus on the organizational objectives, need and policies, in addition to the review of resources, processes and

physical assets and the organization space utilization, to deliver value to the core business and reduce risks (Atkin & Books, 2009, p.15). It's important to involve stakeholders, building owners and others who has legitimate interest in the business in the FM strategy solutions and implementation by communicating clearly. This will make the strategy workable and effective (Atkin & Brooks, 2009, p.22). Strategies in the public sectors are complex, depending on limited budgets, the organizations structure and flexibility, and are managed by politics and rules (Roos, Von Grogh, Roos & Boldt-Christmas, 2014, p.61). A good FM strategy in these organizations should focus on their human resources' weakness and strength, by using a SWOT-analyze method to identify the organizations culture and values, the personnel skills and competencies as well as how to improve it (Roos et al, 2014, p.169). FM strategy plans and solutions should as well always be presented in a written document (Sæboe & Blakstad, 2009, p.14).

### **Standards and policies**

FM standards and policies are documents that can voluntarily be used to formalize procedures, rules, or as a guideline for managing Facility Services and strategies (Standards, 2015). Global competitiveness and quality of life have initiated FM stakeholders to make standards that provide requirements to make goods and services. Also regulate how testing, certification and accreditation to be implemented. The standards are also a solution proposal and contribute to the development of appropriate and safe service processes. They follow the national laws and regulations and can be used to benchmark skills, knowledge in addition to competences for those working at all levels in the FM profession (standards, 2015). (Appendix 1 is a list of the recent Norwegian FM standards).

### **Financial management in FM**

Booty (2001, p.189) means that financial strategy and management support the achievement of the organization's goals. Using planning and control mechanisms for effective use of available finance ensure the required level of service quality (Booty, 2001, s.189).

FM costs are significant and associated with the provision of the building support services, staff and business support. In order to achieve a budgetary control, Booty (2001, 192-196) suggests that its necessary to coordinate and integrate the FM financial processes in the organization's other departments, and the users and contractors should also be aware of the FM costs. This will make Facility managers financial plans clear and usable (Booty, 2001, p.196).

### **Management of Facility services**

According to Atkin and Brooks (2009, p.171-172) the best way to manage the procurement of the facility management is the establishment of one point of responsibility, where the contractor is providing all the services (Total facility management). In the meanwhile it is still necessary to choose procedures that will create more values in the organization and meet user's needs. The FM organization needs to act in a smart strategic way in order to deliver customer satisfaction. This can be done by understanding the organizations culture, its customer and needs, furthermore specifying and delivering in-house service requirements. When there is a need for outsourcing, facility managers should understand how the FM market is developing and benchmarking the performance of the services and other best practices to reduce costs and create value (Atkin & Brooks, 2009, p.5).

### **How can FM fits in organizations?**

FM organization should identify and differentiate between its core and non-core business activities, this is important to ensure that FM activities are focusing on what is needed most. This will develop the working and the core business environment (Atkin & Brooks, 2009, p.15).

Critical reviews should be considered to make the FM fits in the organization, among these are the examination of policies of standards, performance standards, health and safety requirements and FM services quality. Measuring financial processes and procedures, auditing the FM strategy and the



service delivery (customer relations, quality, costs, etc.), will demonstrate the value of the business and offer insights into what and how can be improved (Atkin & Brooks, 2009, p.17).

### **Performance management and the management information system**

Infrastructure management planning is a new concept in FM and Booty (2009, p. 286) defined it as intelligent buildings. This concept supply more efficiency by organizing the buildings structure, system, services and management, and its proven to be productive and cost-effective (Booty, 2011, p.286). Document management systems like databases and helpdesks are technologies that enable finding buildings and activities information, in order to measure performances and satisfy the user and the customer demands (Booty, 2011, p.295-296).

FM professionals are also responsible for health, safety and environment management (HSE) and should integrate sustainability in FM by choosing safe and environmentally friendly strategies and processes (CSR). This practice will increase the satisfactory of the employees working conditions and reduce pollution impacts on people, the buildings and the environment (Atkin & Brooks, 2009, p.120-131). Furthermore, performance management should include sustainable Facility services routines that conserve water, energy, materials and improve the outdoor and indoor environment quality (Cotts, Roper, Payant, 2010, p.175-176).

### **Personnel development**

There are many FM responsables and personnel that are not educated as FM managers. They are likely to have real estate or other education background or career, which means that these employees need to develop FM competences and personnel skills to meet the organization needs (Atkins Brooks, 2009, p.243). The organization should be committed to engage their FM personnel in Education and training programs, to help the FM strategy reaches its goals and add value to the organization (Atkins & Brooks, 2009, p.249). The workplace productivity can also be achieved by good communication, teamwork for problem solving, engagement and trust (Atkins & Brooks, 2009, p.135).

## **3. METHODOLOGY**

The study is based on multiple case study research (Punch, 2014, p120-125). This involves the combination of a qualitative literature review of the background of the Norwegian Universities and University colleges, interviews with the institutions Property managers, and a quantitative data sampling using the FM maturity matrix. Case studies research provides flexibility and helps analyzing the cases in depth by comparing the data provided with the theoretical FM competences (Punch, 2014, p.-119-131).

### **The FM maturity matrix**

The assessment purpose is to map and measure facility manager's performance in the modern world of business, and it is used for research purposes only. The participants in the questionnaire are invited first to provide company and contact data, type of the industry, FM data (managed and rented areas) and data about the FM organizational structure. The second part of the assessment is divided into 7 profiles (strategy, standards and policies, financial planning, service provision, organization fit-for purpose, performance management and personnel development). Each of these profiles includes sub-headings that are divided into 5 maturity levels of competences (Multiconsult, 2012) and they are illustrated below:

Levels	1	2	3	4	5
Level quality	Basics	qualified	Qualified+	Qualified++	excellence

(The FM assessment is attached as appendix nr 1).

## The informants

All the University and University colleges in Norway which are 25 (100%), have been contacted by e-mail and phone (appendix nr 2). Only 11 (44%) of them have agreed to answer the assessment and provided additional information about their institutions and how they manage the properties. To make answering the assessment easier, I did reformulate and most of the questions to the informants I interviewed through the phone. But not all of the 11 property managers completed the whole assessment and the interview. Most of the informants and their institutions want to remain anonymous. Based on this, the results were anonymized and the institutions were marked with numbers.

<b>Universities /University Colleges 11 of 25 institutions / 44% of 100 %</b>	<b>Answered Czerny assessment</b>
<b>Institution nr 1</b>	X (phone interview)
<b>institution nr 2</b>	X (phone interview)
<b>Institution nr 3</b>	X (e-mail )
<b>Institution nr 4</b>	X (phone interview)
<b>Institution nr 5</b>	X(phone interview)
<b>Institution nr 6</b>	X (Phone interview)
<b>Institution nr 7</b>	X (phone interview)
<b>Institution nr 8</b>	X (e-mail)
<b>Institution nr 9</b>	X (phone interview)
<b>Institution nr 10</b>	X(phone interview)
<b>Institution nr 11</b>	X (e-mail)

Table nr 1. Overview of the institutions and how they answered the FM maturity matrix.

## Qualitative method

To contrast, analyze and compare the background information of the Universities and the University colleges' facilities, I collected both data from the institutions online websites and from the interview with the informants that answered the FM questionnaire. There is a danger of empathetic understanding and wrong perception of the captured data, that is why it's important to choose the right design in order to get relevant data (Punch, 2014, p.119). To do so, I used the same questionnaire to ask the informants unstructured questions (Punch, 2014, p.147) that are relevant to the FM maturity profiles, and to get trust and access to more details (Punch, 2014, p.147). The process of collecting the quantitative data using instructed interview was conducted by phone. The qualitative data analyses in this research is inductive (Punch, 2014, p.170), which means that the institutions organizational structure will be analyzed in order to frame a hypothetical explanation about the situation of FM maturity level in these organizations.

## Quantitative method

Quantitative data collection is been used by implementing the FM maturity matrix assessment. The questionnaire represents good knowledge about FM maturity levels in every profile. Variables are categorical (Punch, 2014, p.228) in this method and are represented by 5 levels, ranging from 1 to 5 in every profile for present and expected situation (1- strategy, 2-standards and policies, 3-planning and budgeting, 4-service provision, 5-organisation fit-for purpose, 6-PM and MIS, 7-Personnel development). Statistical package for social science (SPSS statistics) (Punch, 2014, p.199) was used in this research to analyze the mean, ranks, variations, and standard deviations of all the institutions maturity profiles levels results provided from the informants and the frequencies of these categorical variables. Because the variables are categorical and ordinal, the statistical indicators will be estimated in this order (1-2 = level 2, 2-3= level3, 3-4= level 4, 4-5=level 5). I also used Pearson's correlation

method (Punch, 2014, p.216), to analyze the relationship between present and expected situation of all the maturity profiles levels results in the institutions. The main goal is to analyze tendencies using the descriptive statistical results and correlation results.

### Reliability and validity

Reliability is important in measuring variables and consistencies (Punch, 2014, p.237). To make sure that the information provided is reliable, an online research has been conducted to locate FM divisions and the names of the workers in these organizations. I also called several employees in these divisions to get the right FM responsables. There is always question about whether the collected data is reliable or is it affected by the Halo effect (Nisbett, Richard, Wilson, Timothy, 1977), which means the informants can provide false data due to the fact that the interviewer is a student from a known establishment or other circumstances. Validity concept means whether the measuring instrument measures what we think its measure (Punch, 2014, p.239). The assessment I used in this research is an approved FM European document, and it is measuring the levels of FM maturity profiles in organizations based on Best practice, FM theories and experience (Larssen, 2011). The informants that have answered the questionnaire are also proven to be PM Managers or responsables.

## 4. RESULTS, ANALYSIS AND DISCUSSION OF FINDINGS

Because of the large amount of data results, I have only introduced the most relevant background data of the institutions. This includes their overview, their FM organisational structure background, the services they provide and the interviews results (**Nb.** Not all the functions in the organizations models are illustrated, I focused only on the FM position).

The Institutions background, their FM organizational structure and interview results are attached as appendix.

### Statsbygg

Almost all the Universities and the University colleges are owned by Statsbygg. The establishment is a public sector administration company and a part of the Ministry of Local Government and Modernization (KMD). Statsbygg provides functional premises to public sector enterprises, as well as buildings construction and architecture projects. They also manage and administrate states buildings, preservation of heritage sites and the environment. Their vision is to provide cost-effective and functional premises for the Norwegian state (Statsbygg, 2016). Most of the informants working In University colleges, have mentioned in the interviews that Statsbygg is the responsible for operating and maintaining the properties, and they don't have a close contact with the company concerning buildings maintenance and administration.

### FM maturity matrix results

**Maturity Pattern Table – PRESENT SITUATION**

Institution	<u>1</u>	<u>10</u>	<u>4</u>	<u>3</u>	<u>9</u>	<u>6</u>	<u>7</u>	<u>5</u>	<u>8</u>	<u>11</u>	<u>2</u>
<b>Strategy</b>											
1.1	4	4	4	4	2	4	4	4	5	3	4
1.2	3	5	4	4	2	4	-	2	5	3	4
1.3	3	5	4	4	-	4	3	5	5	3	3
1.4	3	5	4	4	4	5	4	5	5	3	-
<b>Standard and Policies</b>											
2.1	4	4	4	3	3	2	2	2	4	2	3
2.2	4	-	3	3	4	3	-	2	5	4	3
<b>Planning and Budgeting</b>											
3.1	2	5	3	4	1	2	2	3	5	4	4

3.2	4	5	4	2	-	4	-	4	5	2	4
3.3	4	5	3	4	4	4	4	3	5	3	3
<b>Service Provisions</b>											
4.1	1	3	1	1	1	3	-	4	1	1	2
4.2	3	1	3	1	1	2	-	3	1	3	4
4.3	4	3	4	2	1	2	-	?	4	4	-
4.4	2	-	3	2	2	4	-	2	-	2	4
<b>Organisations fit for purpose</b>											
5.1	2	4	3	3	1	4	-	2	5	3	1
5.2	2	5	4	-	1	-	-	2	5	4	1
5.3	2	3	3	3	1	2	-	3	4	2	1
<b>Performance Management and Management Information System</b>											
6.1	5	-	4	5	-	2	-	1	4	2	1
6.2	1	-	2	5	-	3	-	-	3	2	-
6.3	3	4	4	3	-	4	-	2	2	1	4
6.4	5	-	2	3	-	4	-	4	4	1	4
<b>Personal Development</b>											
7.1	3	5	5	4	3	3	-	3	5	3	-
7.2	3	5	3	3	4	3	-	4	5	3	4

**Maturity Pattern Table – EXPECTED SITUATION**

Institution	1	10	4	3	9	6	7	5	8	11	2
<b>Strategy</b>											
1.1	5	4	4	4	4	5	4	4	5	5	5
1.2	5	5	4	4	4	5	-	3	5	5	4
1.3	5	5	4	4	-	5	4	5	5	5	4
1.4	5	5	4	4	4	5	4	5	5	5	5
<b>Standard and Policies</b>											
2.1	5	4	5	3	4	2	2	4	4	5	4
2.2	4	-	5	3	4	5	-	4	5	5	4
<b>Planning and Budgeting</b>											
3.1	5	5	5	5	-	-	2	4	5	5	4
3.2	5	5	5	4	-	5	-	5	5	5	4
3.3	5	5	5	4	5	5	4	3	5	5	4
<b>Service Provisions</b>											
4.1	1	3	4	1	1	-	-	4	1	5	4
4.2	3	1	5	1	1	4	-	3	1	5	-
4.3	4	3	5	2	-	4	-	-	4	5	-
4.4	4	-	5	2	-	4	-	4	-	5	4
<b>Organisations fit for purpose</b>											
5.1	5	4	3	3	-	4	-	4	5	5	-
5.2	5	5	4	-	-	-	-	4	5	5	-
5.3	5	3	3	3	-	4	-	3	4	5	-
<b>Performance Management and Management Information System</b>											
6.1	5	5	4	5	-	4	-	4	4	5	4
6.2	5	-	5	5	-	3	-	4	4	5	5
6.3	5	4	4	3	-	4	-	2	4	5	5
6.4	5	-	3	3	-	4	-	4	4	5	4
<b>Personal Development</b>											
7.1	5	5	5	4	5	4	-	3	5	5	-
7.2	3	5	3	3	4	3	-	4	5	5	4

**SPSS results**

SPSS results tables are attached also as appendix nr 2. The relevant statistical results and significant correlations are extracted and described.

**Pearson correlation of the significant results of maturity profiles (sub-headings levels) in 11 institutions.**

Maturity profiles sub-headings	Corporate objectives (Present)	Maturity profiles sub-headings	Strategy (Present)
Interrelationship between property an FM (Present)	,841 <sup>***</sup>	Strategy (Present)	,818 <sup>***</sup>
Interrelationship between property an FM (Expected)	,757 <sup>***</sup>	User's responsibility on space drivers (Present)	,815 <sup>***</sup>
Budgetary regime (Present)	,674 <sup>*</sup>	Customer Results (Present)	,767 <sup>***</sup>
Corporate objectives (Present)	1	Corporate benefits (present)	,753 <sup>***</sup>
Society Results (present)	,562	Utilisation of Database (Present)	,735 <sup>***</sup>
The interrelationship of financial process to standards and policies(Present)	,538	Engagement and empowerment (Expected)	,733 <sup>*</sup>
Budgetary regime (Expected)	,528	External partnerships (Expected)	,726 <sup>*</sup>
Customer Results (Present)	,501	Training for gaining knowledge and skills (Present)	,724 <sup>*</sup>
Demonstrating the value to the business (present)	,498	Demonstrating the value to the business (Expected)	,716 <sup>*</sup>
Database (Present)	,490	Budgetary regime (Expected)	,680 <sup>*</sup>
The interrelationship of financial process to standards and policies(Expected)	,481	External partnerships (present)	,670 <sup>*</sup>
Organisational development (Present)	,450	Corporate benefits (present)	,651 <sup>*</sup>
Database (Expected)	,450	Provision of strategy and services (Expected)	,639 <sup>*</sup>
		Interrelationship between property an FM (Expected)	1
		Society Results (present)	,601
		Organisational development (Present)	,564
		Controlling of services (Present)	,560
		Customer Results (Expected)	,521
		Presence and ownership of standards and policies (Expected)	,491
		Budgetary regime (Present)	,483

Maturity profiles sub-headings	Presence and ownership of standards and policies (Present)
Provision of strategy and services (Expected)	-,232
Management of property and FM services (Expected)	-,207
Budgetary regime (Expected)	-,185
Demonstrating the value to the business (present)	-,118
Corporate objectives (Present)	-,057
Corporate benefits (present)	0,000
External partnerships (present)	0,000
Integration of policies and standards at all levels (present)	0,000
Management of property and FM services (Present)	0,000
Controlling of services (Expected)	0,000
Integration of policies and standards at all levels (Expected)	0,000
Training for gaining knowledge and skills (Expected)	0,000
Customer Results (Expected)	,066
Engagement and empowerment (present)	,102
Customer Results (Present)	,155

	Integration of policies and standards at all levels (present)
Interrelationship between property an FM (Expected)	-,154
User's responsibility on space drivers (Present)	-,113
Corporate objectives (Present)	-,113
Customer Results (Present)	-,043
The interrelationship of financial process to standards and policies(Present)	-,030
External partnerships (E xpected)	,012
The interrelationship of financial process to standards and policies(Expected)	,070
Budgetary regime (Present)	,110
Provision of strategy and services (Present)	,137
Organisational development (E xpected)	,154
Corporate benefits (present)	,158
Presence and ownership of standards and policies (Present)	,209
Database (E xpected)	,211
Budgetary regime (Expected)	,248
Training for gaining knowledge and skills (Present)	,255
Demonstrating the value to the business (present)	,287

	Controlling of services (Present)
Engagement and empowerment (Expected)	-,040
Corporate objectives (Present)	0,000
Presence and ownership of standards and policies (Present)	0,000
Interrelationship between property an FM (Present)	,055
The interrelationship of financial process to standards and policies(Present)	,060
Demonstrating the value to the business (present)	,068
Procurement strategy for FM and property services (Present)	,092
Database (Present)	,115
Provision of strategy and services (Present)	,119
Controlling of services (E xpected)	,187
Demonstrating the value to the business (Expected)	,193
Strategy (Present)	,212
Engagement and empowerment (present)	,232

	Organisational development (Present)
Demonstrating the value to the business (present)	,847 <sup>**</sup>
Strategy (Present)	,818 <sup>**</sup>
Training for gaining knowledge and skills (Present)	,809 <sup>**</sup>
Demonstrating the value to the business (E xpected)	,777 <sup>**</sup>
Controlling of services (E xpected)	,730 <sup>*</sup>
Budgetary regime (E xpected)	,725 <sup>*</sup>
Provision of strategy and services (E xpected)	,720 <sup>*</sup>
Strategy (E xpected)	,716 <sup>*</sup>
Procurement strategy for FM and property services (Present)	,690 <sup>*</sup>
Budgetary regime (Present)	,675 <sup>*</sup>
Engagement and empowerment (Expected)	,667 <sup>*</sup>
Database (E xpected)	,649 <sup>*</sup>
Interrelationship between property an FM (Present)	,632 <sup>*</sup>



These results indicate that there are strong correlation between the present situation of the strategy sub-headings levels (strategy and corporate objectives), organisation development, and service provision and performance management sub-headings levels.

In the meanwhile, we can see that there are no relationship between the present situation of the sub-headings levels of the presence and the ownership of standards and policies and the integration of policies and standards, management of property and FM services and the expected situation of controlling the services levels. There are also no correlation between the present situations of Controlling of the services levels and the presence of the standards and the ownership of the standards and corporate strategic objectives.

### **SPSS results of maturity profiles and their sub-headings levels in every institution**

#### **Strategy**

The strategy profile results show that sub-headings mean are between levels 3 and 4, both for present and expected situations. There are some variations in the frequencies (level 4 and 5 are almost repeated frequently in corporate objective and corporate benefits for the present and the expected situation). The histograms show a normal distribution for the strategy levels for both situations, while there is some positive skewness in the expected situation of the levels. The Pearson correlation shows a good relation between the present and the expected situation for all the sub-heading levels.

#### **Standards and policies**

The maturity levels sub-headings mean of present and the expected situations, for the standards and policies profile are between 2 and 3. Levels 2 and 3 are frequent in the present situations, while level 4 is frequent in the expected situations. These levels show also a normal distribution. The sub-headings levels for the present and the expected situations are correlated.

#### **Planning and budgeting**

The means for the sub-headings levels for the present and the expected situations are around 3 and 4 for the expected user's responsibility on space drivers. Level 4 is frequent in the present situation for budgetary regime and level 5 in the expected situations for all sub-headings. There is a positive skewness for the expected situation of user's responsibility. The correlation results show a strong relation between the present and the expected situation for budgetary regime and the interrelationship of financial process to standards and policies levels.

#### **Service provision**

The maturity levels sub-headings mean for present and expected situations of the service provision profile are between 1 and 2. Level 1 is frequent in the present and expected situation of management of property and FM services and controlling of the services, while level 4 is frequent in the expected situation for external partnership. There is a significant correlation between the present and expected situations of procurement strategy for FM and property management levels.

#### **Organization fit-for purpose**

The means for the profile sub-headings levels are between 2 and 3. The level 3 is frequent in the present and the expected situation of demonstrating the value of the business sub-heading, though level 5 is frequent in the expected situation of provision of strategy and services. The histograms show a normal distribution for all subheading levels. The correlation is significant for the present and the expected situations of organisational development and demonstrating the value to the business levels.

### **Performance management (PM) and the management information system (MIS)**

The levels mean of the sub-headings varies between 1 and 3. Level 4 are frequent in the present situation of customer and society results. While level 5 is frequent for the expected situation of utilisation of database. There are strong correlations between the present and the expected situation of database and database utilisation levels, and costumer and society levels

### **Personnel development**

The personnel development sub-headings levels mean are around 3. The level 3 is frequent in the present situation of training and gaining knowledge and skills and engagement and empowerment. In the same time level 5 is frequent in the expected situation of training and gaining knowledge and skills. The correlation results show a good relationship between all the sub-headings levels.

### **Case studies analysis and discussion**

The qualitative research shows that most of the selected institutions have a flat functional organisational model, based on functions and roles (Roos et al, 2014, p.321). The property management division is often managed by the finance department, which is quite normal in functional organisations. I can also notice that the FM organisations are not directly managed by the CEOs of the institutions, but by many PM Managers. This also varies from institution to another; some institutions have Property manager for every type of service, like cleaning, maintenance and building operations. Although it was not clear how the FM organization is structured due to the difficulties of finding the wright information from the institutions websites. Institutions 3, 8 and 10 provide both hard and soft FM services in their divisions. The rest of the institutions choose to separate buildings operations and maintenance and soft FM services (reception, security, IT, etc.). The background results show that these institutions provide a variety of services to their users, and most of the FM services are outsourced or out-tasked using SLAs. The smallest University college (10000m<sup>2</sup>) which is institution nr 4 is producing most of the FM services in-house.

SPSS correlation results of all the FM maturity profiles sub-headings levels in the institutions, show that there is a strong relationship between the strategy and the organisation development profile. In the meantime, there is a weak or none relationship between standards and policies integration and ownership and the management of the property and the FM services.

The mean of FM strategy and the frequencies in these FM organisations is in the qualified management position, which means PM and FM are partially strategically integrated , but it is expected that both will be integrated with communication and improvements plans to maximise benefits and minimize costs. Pearson's correlation shows also a good relationship between the present and the expected strategy levels. Institution nr 8 had the highest strategy profile levels.

Standards and policies statistics results are in the qualified management position, although there is some variance in the integrations of the standards. This shows that most of these institutions have written standards and policies, but they are not fully implemented and are not clear to the FM operators. In the mean while it's expected that the standards and policies will be understood and partially integrated, there is also a good correlation between the present and the expected situation of the implementation and the integration of the standards levels.

The mean of the FM planning and budgeting is in the plus qualified management position. There are some differences in the standard deviations of the present and the expected budgetary regime, and the financial processes. This means that the financial planning and budgeting in these FM organisations are based on performance measures. There is also a relationship between the property, the users and the FM costs levels. But the correlation of the present and the expected situation of FM planning and budgeting levels is not strong enough, especially for the users' responsibility.



The service provision results show a basic level of management, and there is some significant variance for the present and the expected situations. This means that the services in most of these institutions are accomplished by tasks, procedures and are controlled by managers. In the mean while Pearson correlations show a weak relationship between the management of property and FM services present situations levels, and procurement strategy for FM and controlling of the services present and expected situations levels. This indicates that managing and controlling the services are on the basic level and there is not a specific strategy for the FM services provision.

The organisation fit-for purpose present and expected correlation results indicates that there is a strong relationship between organisational development and the demonstration of the value of FM to the core business, the mean also indicates that these institutions expect an organisational framework for FM development to business outcomes.

The mean results of the PM and the MIS (Management information systems) maturity profiles levels show a qualified management position. Although most of these institutions may not have a central database to store and control FM information and processes, both customer satisfaction and environmental and social obligations are partially integrated in the FM performance management, but the correlations results indicate that there is a strong relationship between the database, customer and society results for both present and expected situations, this means that these institutions have a PM and MIS strategy.

The personnel development statistical results show a plus qualified management position. This shows that these institutions have a strategy for training and empowering their personnel. And they expect to improve the personnel knowledge skills and their engagement.

Most of the Universities and the University colleges have an FM organisation that supports the core business, this supports the theoretical definition of FM by Sæboe and Blakstad (2009). Statsbygg who owns most of these institutions buildings, operates and maintains the properties, this shows that FM organisation in these institutions may have limited knowledge about the process of these services. The institutions provide many services to their users, which mean that these FM responsible are service oriented. Most of the FS are outsourced, this indicates that the PM Managers work primarily with contract managements and SLAs because they have to manage and follow up these agreements. The organizations organisational models are function-based and they work by standardised line operations and management (Roos et al, 2014, p.321), this may indicate the reason why the FM service provisions are delivered by line management in most of these institutions. The strategy maturity levels results indicate the presence of the FM strategy in these institutions, but there is still may be some lack of understanding and communicating the importance of the FM integration in Property management strategy, to deliver value to the core business and for an effective property management.

While Standards are important in FM procedures and strategy as it is mentioned in the theoretical part. The maturity profile results show that many of these property managers, may still have to improve the ownership and the integration of standards and policies in their buildings operations, and make them clear for their workers.

The financial management strategy results show that most of the institutions are planned and budgeted according to services performance measures, this may show that the financial processes are not communicated enough with the organisation and the users, to raise awareness and improve FM costs reduction just as Booty (2009, 192-196) mentioned before. However, it's clear that the PM Managers want a full coordination and understanding of the FM costs in the organisation, and continuous communication with the users leads to more efficient use of the buildings.

Aktin and Books (2009, p.172-172) theory about effective FM management and control rely on well-defined FM processes procurement, measurement of FM contracts performance against the business needs and the users expectations. It is likely that this is not fully accomplished in the FM organisation in these institutions.

It is important that the organisational development of these Universities and University colleges examines the quality and the integration of PM and FM services, in order to get better core business and FM outcomes. From the SPSS descriptive statistics of organisation fit-for purpose, I can see that there is gap in the integration and the communication of FM with PM and the core business.

The improvement of FM performance management in most of these institutions may still be based on the user complaints and lack of new PM and FM technologies like a database, that enables quick finding of buildings information and activities in order to measure FM performances and users' needs. However, the institutions managers expect the inclusion of more PM technologies in the buildings for a better PM and FM information management, and environment and social responsibility.

The managers of these institutions appreciate and recognize the value of training and developing the personnel's FM skills, and they expect to implement more improvement activities to allow the personnel to communicate their needs, which I think it's a good strategy for creating better FM values, team work and engagement.

### **The FM maturity matrix limitations**

The FM maturity matrix is a useful tool to measure FM maturity in organisations which want to achieve Excellence for FM cost reductions and effectiveness. The matrix's 7 profiles provide good guidelines and expertise, however some sub-headings in every profile may not be relevant and can misinterpreted by the FM managers. This includes the communication of planned FM strategies in the organization and the owners of the properties, which I think it can be understood by the managers as they may have to involve the building owners and users in FM planning and delivering. This may not be very common in the Norwegian FM organisations. The standards sub-heading which is focusing on the integrations of standards in the financial processes and feedbacks from the users, can be misinterpreted because standards are not considered as mandatory policies. While FM planning and budgeting profile considers clear ownership and relationship of property and FM costs and processes are Excellence. This may not be considered by PM Managers in Universities and University colleges and Statsbygg personnel or the other real estate firms. The profile is also limited concerning how FM budgeting regime should be planned, and what this means to the buildings live cycle costs and performance costs. Managing and controlling the FM services by a team of a local management committee with users and clients, are considered as a very good maturity level. I think this may also not be considered by the Norwegian FM managers in these institutions, because sitting and discussing FM services with facilities users are not common in Norway. In the other hand, I think effective service provision has to be done from the customers and the providers sides, through the analysing of the building environment, its culture and measuring FM performances. The organisation fit –for purpose and performance management sub-headings I suggest, are good maturity levels. But it is not sure they can be applied in FM organisations who is dealing with outside buildings operations, like parking and gardening's services because these services are difficult to measure. At the same time, I find the performance management (PM) and the management information systems (MIS) profile very limited, regarding sustainability in building operations. And the need to reduce resources and provide routines and materials that help decrease occupant health issues, along with protecting the building and the environment.

## **5. CONCLUSION**

The research's aim is answering two main questions concerning the present and expected FM maturity profiles levels in Universities and University colleges, using the FM maturity matrix. In addition to identifying the FM gaps and pitfalls in these organizations, by comparing the data provided by the informants with the FM maturity profiles matrix's Excellence levels, and the FM theoretical key performance indicators mentioned by Atkin & Brooks (2009) and Booty (2009). The methodology used in this research is a case study of FM organizational structures, how FM or PM responsables in these institutions consider and perceive FM, and what are their expectations for an effective FM in

their organizations. This was done by using a combination of qualitative and quantitative method in the form of background research, interviews and FM maturity matrix questionnaire.

The main findings in this research show that most of the institutions buildings which are public, are owned and partially managed by Statsbygg personnel. These institutions have an FM strategy that support the core business, and they provide many services related to the users and the facilities. Their organisational structures are function based and the Property management sections are often managed by the finance department. The FM standards and policies are not fully integrated or understood in the organisations, but it is expected to improve the integration of the standards to make them clear to the workers. The FM financial management and service provisions are planned according to service performance measures. It is expected that the coordination and the understanding of the FM costs in the organisation will be implemented, to reach effective FM costs and performance. Similarly, the FM organisation in most of the institutions may be not integrated and communicated with the core business and the building's owners. The FM performance may still rely on user's complaints and line management, with the expectation of including more FM technologies to facilitate the FM tasks. Furthermore, FM personnel training and development are very important for the FM organisations in these Universities and Universities colleges.

The research implications can be illustrated by the lack of some informants collaboration to get as much information as possible and the limited time contributed to finish this research.

The major limitations of the study are the interpretation of the FM matrix profiles sub-headings. This should be improved and reduced to fit the Norwegian FM strategies and work practices and environment.

As a conclusion, the FM organisation in Universities and University colleges needs to improve and build more FM competences in order to manage buildings effectively. This can be done by the wright implementation and understanding of the FM standards, the use of intelligent buildings system technologies, like BIM (buildings information system), helpdesk, database. In addition to managers and operators skills and FM knowledge's development. Communicating and integrating FM in the organisation and the property management, will contribute to a better understanding of FM costs and processes. Involving the users and the building owners in FM tasks and planning, will also improve the quality of the buildings and demonstrate more value to the organisation.

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## **The impact of fiscal policies and community services on housing market dynamics and urban land rent in crisis – The comparative analysis between Florida and Spain**

David Bogataj

University of Padua, Department of Management and Engineering

E-mail: david.bogataj@gmail.com

Francisco Campuzano Bolarin

Technical University of Cartagena, Faculty of Industrial Engineering

CERRISK-INRISK

### **Abstract**

Florida and Spanish coastal areas are two major destinations, where American and European citizens, mainly older persons from North of these two continents, are buying properties where they intend to move when they retire. Therefore until 2007, the flow of older inhabitants to the south was increasing rapidly, influencing the dynamics of housing construction. For example, in 2006 only the yearly growth of transactions in Spain was 30%, but after the crises, the inflows were fallen, and a yearly number of all housing transactions since 2007 till 2014 has fallen more than 30%. The flow of foreign buyers participates to the housing transactions more than 17%. When total number of all transactions in Spain was also decreasing in the time window 2012-2016 with minimum in 2014, so that the index 2014/2012 was 47 only, the value of these transactions with foreign buyers was growing again since 2012 from  $6,4 \cdot 10^9 \text{eur}$  to  $11,6 \cdot 10^9 \text{eur}$  in 2016, which means more than 1 % of Spanish GDP per year (Observatorio de Vivenda y Suelo no. 21, 2017). The tax policy and communal services in both continents influence this intensity of flows. In the paper, we shall present how some factors influence the urban land rent and its capitalization in Spain and Florida, and also how fiscal policies and the communal services should be improved to increase the value of transactions or the net present value of housing rents. The main results show that the land rent and the value of transactions in the area where communal services for older persons are more developed could nearly double. In the USA they have not introduced the real estate transaction taxes while in Spain the transaction tax is determined by region and is equal to 7 % - 8 % (At Murcia region is equal to 8 %). We have found out that the proper fiscal policy enables to adapt the housing market in case of volatile economic growth. Therefore this financial flow could be more stable and the time windows in a period of economic decline and crises which influence badly on housing market can be reduced substantially. This conclusion is important also for industrial engineering sector which can contribute to better communal services by organizational schemes which reduce the prices of facilities and other services to older inhabitants at the same costs of logistics for seniors, which could contribute to the higher attractiveness of locations for new buyers and tenants.

**Keywords:** Housing market dynamics, Fiscal policies, Urban land rent, Crisis

## 1. Introduction

Numerous scientific regional analyzes and the development of land rent theory in the last quarter of millennium were focused exclusively on the sites of production of agricultural (earlier - Von Thünen, 1826) and (later- Alonso, 1964) manufacturing products. Our paper focuses on the sites of consumption in the postindustrial society. Instead of looking at large agricultural land as 200 years ago or at manufacturing plants producing for export or at multinational headquarters, this paper is looking at the impact of climate benefits, restaurants and cafe, hairdresser and swimming pools, communal lounge, gardens, social activity rooms and other amenities like public or private libraries, internet access and shops, schools, hotels, and hospitals, on the migration flow and urban land rent including its capitalization.

The question of the attractiveness of regions is of special importance in Europe because of high disparities in current account surplus between Northern European Countries and Southern European Member States. A country is said to have a trade surplus if its exports exceed its imports, and a trade deficit if its imports exceed its exports. Current account surplus is also an excess of national saving over domestic investment. In 2016, current account surplus for Northern European countries was, for example, the following: Germany 8,3%, Denmark 8,1%, Netherland 8,4, Sweden 4,2%, Switzerland 11%. In Southern Countries, the disparities have been lower than years before because of austerities programs dictated to Southern Europeans. If northern countries' surpluses were used to finance the retirement of northern workers in Southern European peripheral countries with purchase of retirement properties and spending their pension, health and long-term care benefits, the balances would be able to achieve. This would contribute to the development of Silver Economy in the Southern European peripheral countries. This direction to the silver economy in Europe is supposed to rise welfare of Europeans in general: new jobs for younger cohorts in the silver economy and higher welfare for older inhabitants. These direction to further development in southern countries is obvious in US, especially in Florida, but their factors of attractiveness which highly influence flow of older cohorts and growth of urban land rent are not the same as studied and recognized as important in Europe.

The attractiveness and stickiness of regions and cities for residents and visitors (also part-time inhabitants who bought or rent the housing units in city /region) which influence urban land rent and its capitalization depend on micro-location and construction quality of housing unit and especially on regional/urban assets. In ATTREG project (Russo et al., 2013, Drobne and Bogataj, 2014, 2015, 2016) we have studied a long list of indicators, relating to the mobility drivers for specific groups which we classified into the following five categories of territorial capital:

□ **Environmental assets:** climate, geographical and landscape characteristics, landscape quality and attractiveness, and settlement structures. Here the climate characteristics (Tourist Climatic Index developed by Mieczkowski, 1985, evaluated on the set of climatic properties that include temperatures, humidity, radiations, rainfall, etc.) have been evaluated.

□ **Economic and human capital assets:** labour market demand and supply, employment and wages investment, wealth indicators, and differentials in GDP per capita.

□ **Anthropic assets:** built environment including accessibility (transportation infrastructure and communication available data (depending on the presence and quality of the transport infrastructure), "urbanization" indicators, schools, hospitals and another medical center in vicinity, cultural heritage, and other tourism attractions. Anthropic assets measured by the intensity and quality of the built "urbanized" environment, where the more developed tourist resort areas are measured in details, including evaluation of public green spaces and gardens and some urban infrastructure, has been observed and measured.

□ **Social and cultural assets:** age structure and related amenities for students and retired inhabitants' communities and related infrastructure data. Amenities available have been studied in details, alike to cost of services and availability of specific services and goods which depends on the age structure of inhabitants and visitors (Russo et al., 2013). we have identified the key ingredients of attractiveness in different types of territories, from vibrating city centers to tranquil rural settlements, taking into account issues such as access to services, well-being, and quality of life.



□ **Institutional assets:** level and efficiency of public spendings, level of services and level of those employed in public sector (schools, health, services for older cohorts...). We investigated in which way policy makers can improve the attractiveness of their city or region by reconciling the interests of both, residents and visitors and how the fiscal policies influence it. How the proper policy influence building the silver economy and assure the quality of life.

We found out that all these indicator influence attractiveness and stickiness of areas and therefore mobility and urban growth and from these characteristics also urban land rent and the prices of real estate. But the impact on migration flow depends on the age cohorts which migrate in Europe, like in the US.

## 2. Immigration to Spain

Figure 1 shows the difference of net migrations regarding age cohorts 25-49 ages and 50+. From net migration rate, we can assume that there is intensive emigration flow from east and north and immigration to west and south. But older cohorts are emigration less from Nord and immigration less to the south which is a different experience than US migration flows from north to south (Florida).

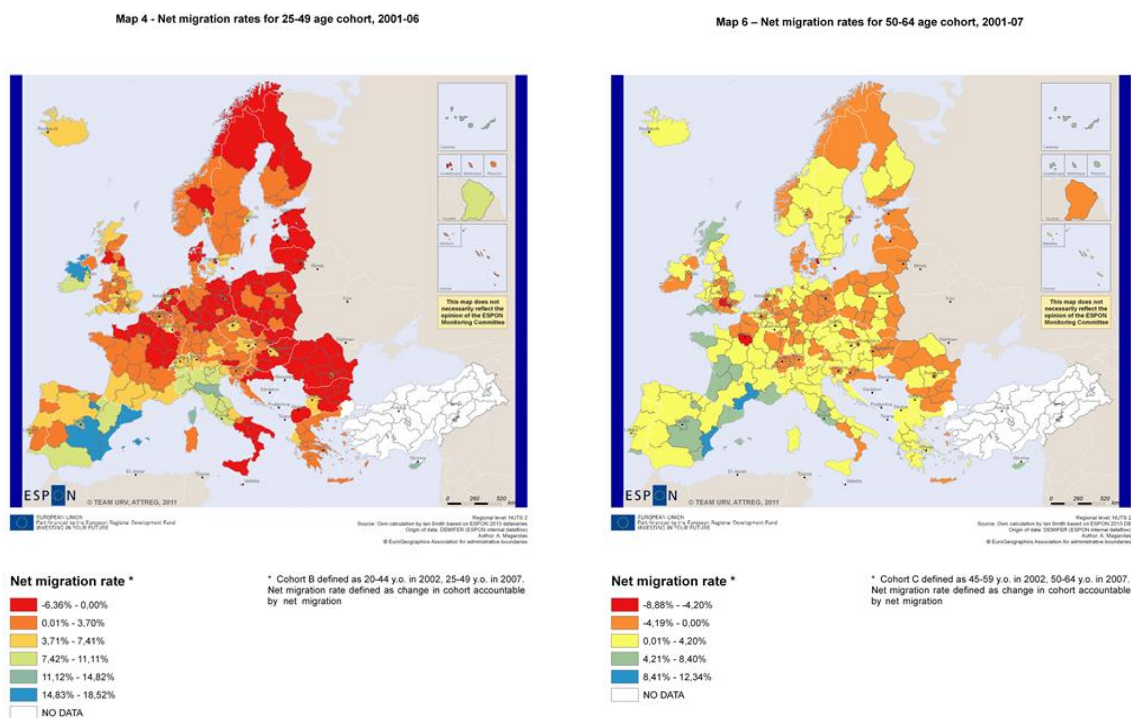


Figure 1: Net migration rate 2002-2007 for 20-44 (in 2002) and 25-49 (till 2007) (left) and 45-59 (in 2002) and 50-64 (till 2007) age cohorts (right) . Source: Russo et al, 2013

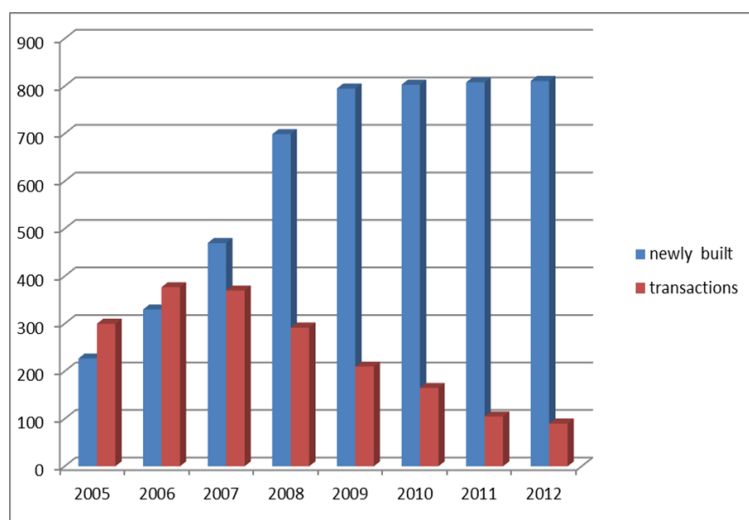


Figure 2: Spanish housing construction dynamics and the dynamics of transactions in the housing market in the period 2005-2012 (presented in 1000 units on the ordinate axis. ( Source: Observatorio de Vivendas Y Suelo, 2014).

The number of immigrants in Spain was actually high, in 2004-2009. In this time window the yearly immigration was 1.5% of immigrants per inhabitants, but in 2010-2014 it fell to 0.87%, according to the EUROSTAT statistics <http://appsso.eurostat.ec.europa.eu/nui/submit>. We found out that only 1-3% of them are buyers of housing units. The number of transactions of housing units in Spain is presented in Figure 2 where the first effect of the recession is clearly presented, and Figure 3 where longer time series is given for domestic and foreign buyers.

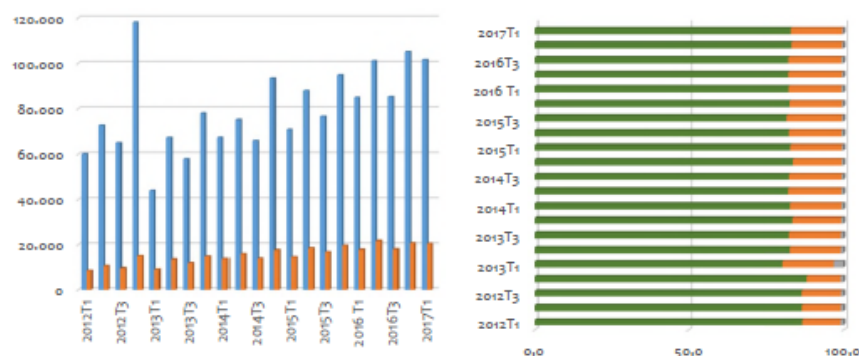


Figure 3: Number of housing transactions (left) and structure of buyers by nationalities (foreign or not) in Spain (right) in the period 2012-2017 ( Source: Observatorio de Vivendas Y Suelo, 2017).

The time series of prices per m<sup>2</sup> is given in Figure 4. We can see that the minimum value was reached in 2014, but now the recovery is very slow.

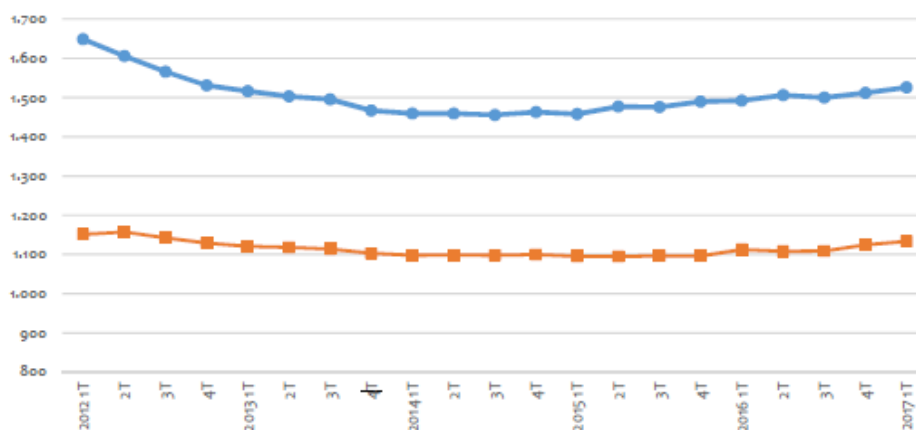




Figure 4: Time series of the prices of housing units per m<sup>2</sup> in Spain 2012-2017( Source: Observatorio de Vivendas Y Suelo, 2017).

We have made the statistical analysis of prices of housing units in the mostly costal area of Murcia region, Malaga and Alicante. 258 housing units have been observed. For homogeneity reason, we have study only prices of 1-3 bedroom apartments. 35 of them have been the first line to the see, therefore having the *highest environmental asset*. and 181 of them have been less than 500 meters from the see. All others have been far from the costal area. 75% of them had community pool as important amenity for residents on the coastal area. The average price for those 181 units , havin walking distance to the see was 1456 eur/m<sup>2</sup>, but the price of those in the first line to the see was in average 65% higher than the price for those up to 500 m to the see. If the units have been organized in the retirement community (*high entropic, social and institutional asset*), the prices have been in average for factor 1.62 higher than for those which are far from the majority of all amenities for seniors and without organized fast accessibility to medical care (it was outsourced). The housing units with very bad accessibility (higher floor without lift) have only 65% of prices of comparable units with good accessibility. The impact of vicinity to the city center of towns with more than 50,000 inhabitants (*anthropic asset*) was only 22% higher than the distant units (more than 3 km from the city center) although the accessibility with public transport was poor. It is interesting the difference between UK buyers and other inhabitants. While UK buyers do not appreciate the first line very much to the see and prefer to be close to the golf areas and UK restaurants and shops (*anthropic and social asset*) , the other buyers evaluate the first line to the see the most.

The question appears way European older cohorts are less mobile than US retired inhabitants. If we are comparing environmental assets differentials and anthropic asset differentials we can see that the difference between the North-South regions differentials in Europe and US (Nort regarding Florida) are not significant. Therefore we would expect more intensive flows from North to South also in Europe. The reasons for lower migration flows in Europe can be found in differences in social and institutional assets.

### 3. Migration to Florida

In Florida, migration is the primary source of population growth and growth of housing development. At least 80 percent of the state's population growth was due to net migration. Annual Migration from abroad to Florida in 2005–2009 was 135,327 foreigners annually and in 2010–2014 equal to 150,842 immigrants, while these numbers for domestic net migrations have been 41,974 in the time window 2005-2009 and 90,353 in 2010-2014. It means 0.86% and 1.17% of immigrants per Florida inhabitants per year in each time window respectively. The flow from abroad represented more than 76% in the time window 2005-2009 and had fallen to 62.5% in 2010-2014. The US is expecting the iimmigration reform which would influence the net population growth and provide a boost to the housing sector. As Wang and Rayer (2016) reported, "*many of the states that have consistently attracted the largest foreign-born populations were also some of the hardest hit by the housing crisis that began in 2006 and was able to benefit directly from increased demand in the years ahead*". Increased population growth leads to a greater demand for housing and better recovering residential construction industry. According to Saiz (2003) and Winkler (2013), immigration inflow of 1% of the population is associated with an increase of rent and transaction value of housing property for 1%. Immigration reform can increase not only population growth and demand for housing, but influence directly the growth of GDP.

In the demographic structure of immigrants to Florida, special attention must be paid to the cohorts of immigrants over 55 years of age. They are mostly buying properties in retirement communities or close to retirement villages which are hubs for older inhabitants around the villages. In our visit to retirement villages in Tampa and its surroundings, also living 2 months in one of such village, we have realized that the rentals in such villages are 50-90% more expensive than the rentals of properties in less organized areas and properties of housing units in such retirement communities are also much higher.

The best example is The Villages, where the hub of retirement communities influenced double prices in the bottom in 2012 (the median of two bedroom homes was 200\$, but in the near area of Leesburg was able to sell the similar housing units only for up to 100\$. Even in 2016 the amenities and logistics in retirement communities in The Villages are rising the prices for 60% as it is obvious in figure 2.b and 2.c.

The Villages is a statistical region called census-designated place (CDP) spreads over three counties (The main two are Sumter and Marion County) . It is part of the broader master-planned age-restricted community. The Villages is the fastest-growing U.S. city (2013-2014) and is particularly designed for 55+ inhabitants. Its main attraction is low taxes (institutional asset) which are directed mainly to the development of amenities for seniors like investments and operational activities in golf courses, highly accessible landscape design for seniors, and spas (anthropic asset), while the environmental asset is of the same value. It is interesting to look at administration, development structure, and control of Community Development Districts, which is controlled by the single development company owned by Gary Morse.

While rent of 2 bedroom housing units in suburbs of Tampa was 650 -1500 \$ per month (excluding seaside area which has more than double prices), the prices of the similar housing units in retirement communities have been 50% higher and in CCRC 2.3-3.5 times higher for the same size and quality. The question appears what is the reason for such differences.

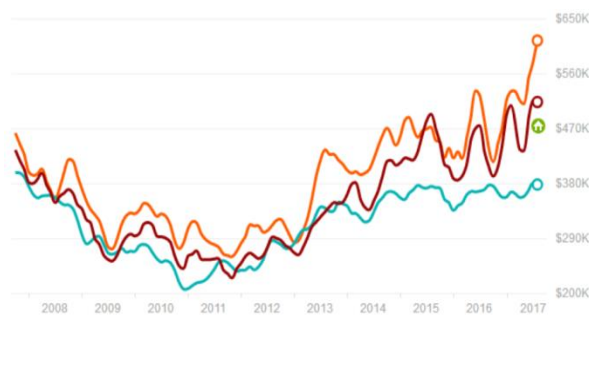


Figure 2.a: Median sale price for 2 bedroom homes in Miami 2008-2017

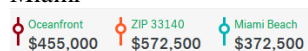


Figure 2.b: Median sale price for 2 bedroom homes in Leesburg as all age municipality, 2008-2017

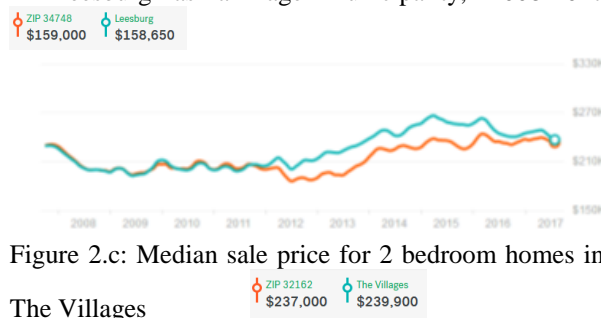


Figure 2.c: Median sale price for 2 bedroom homes in The Villages

A retirement village consists of housing units which are privately owned or leased for older adults. It is important that these units are supported by a central hub that provides catering, medical care and social activities which also include law cost and frequent transportation services. Most housings with care schemes have easy accessible restaurants and cafes, communal lounge, gardens and swimming pools, hairdressers and similar facilities, activity room and launderette, while many also have a library, gym, computer access and a shop or are organized in the vicinity of golf areas. In hubs of retirement villages, the amenities are open not just to residents of retirement village but also to the wider community, reflecting a more integrated approach to community health and social care activities, which gives to The Villages. They have organized sharing access to primary health care and easier access to hospitals. There are organized social services for people living in the scheme and those living nearby. The services and social activities integrate owners of housing units and other inhabitants of retirement villages and around, reducing their isolation and increasing the cost-effectiveness of local services through economies of scale. The exposure to risks of older inhabitants is mitigated by maximizing preventative approaches to health and wellbeing. Retirement communities are often

financed through the insurance schemes which include easier movement of old people through different categories of care and services in the hospital when needed. These activities in Florida increase the housing prices to more than double. The special case of retirement communities in Florida is Continuous Care Retirement Communities (CCRC) that guarantees the lifetime care for their residents where the type of dwelling is adopted to the level of functional capacity and needed intensity of care. There is the following type of dwellings: independent living, assisted living, memory care units, and nursing homes. The establishment and operation of CCRS are regulated by Florida Statute 651 which define that the license for development and operation of CCRC is issued by the Insurance Commissioner and requires the actuarial valuation of assets and liabilities. On this way the residents feel safer and are willing to pay more for housing and care in such highly controlled retirement villages (*institutional asset*). Such approach is raising silver economy in Florida.

#### 4. Conclusion

The development of land rent theory in the last quarter of millennium was focused exclusively on the sites of production of agricultural and manufacturing products. When the demographic structure is changing so that cohort 65+ presents one-third of all population in Europe and USA we should pay attention to the sites of consumption in the postindustrial society, where the growing rate of old adults influence changes in demand for housing, logistics, health and social care and other services. We have studied a list of indicators, relating to the mobility drivers of older cohorts which influence urban land rent and its capitalization in the transaction value of the properties in the areas where the environmental factor, at least differentials between the area of origin and destination, especially the climate properties are very similar. We have considered the five categories of territorial capital, environmental assets, economic and human capital assets, anthropic, social and institutional assets, and found out that

- The first line to the sea (Oceanfront, Sea front) has very high impact on the land rent and the value of housing unit on the market (environmental assets which raise the rent at Clearwater even 4-times higher than in inland).
- Regarding economic and human capital assets the requirements in the silver economy do not seem to be very high, but
- Tax policies have been found as an extremely important factor. One of policy which increases the flow of immigration to the residential areas is low taxes because all budget is directed only to the investments for older adults (The Villages). The other important policy is a reduction of the taxation of transactions and increases the annual property taxes, which is the case in Florida, but not in Spain.
- The distance to the city center is still important but less than in industrial societies.
- The most important are to develop hubs for retirement communities and CCRCs with amenities offered through such organization of society. It assures stable and high rentals and transaction values of property which has a very positive correlation with the intensity of migration flows. Well organized retirement communities with all amenities available and safety programs assured by good CCRS product could have a high positive impact on the dynamics of the prices of housing units, which can nearly double the income achieved by development of housing, logistics and other services for older adults.

Being aware of all these endowments and required policies, the disparities between European countries regarding GDP could be lowered without introduction of austerities programs dictated to Southern Europeans. If northern countries' surpluses were used to finance the retirement of northern workers in Southern European peripheral countries with purchase of retirement properties and spending their pension, health and long-term care benefits, the balances would be able to achieve.

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## **Critical overview of approaches to evaluating real easement – the case of Slovenia**

Bojan Grum

Institute of Real Estate Sciences, Ljubljana, Slovenia

E-mail: bgrum@siol.net

### **Abstract**

In the article we find that the valuation of real estate burdened with real easiness, depends how the easement will affect the real estate, what is its further use, where the easement is located, how long the easement lasts and whether the easement can be removed and how much that will cost. It is important, what kind of interference in setting up the easement; the question is whether the owner may use the land under the easement or whether it is related to permissions, contractual arrangements. The identification and the interconnection of the main rights with the easements in the real estate is therefore crucial for the evaluation. We used the method of systematic approach in the following steps: the research assumption by stages, the definition of inclusion criteria and the search and the selection of studies. We have found out that the determination of the easement value can be divided into three phases: i/ Stage of easement (construction); ii/ The real easement itself, iii/ The burden (usually negative) that burdens the actual easements (eg. noise, dust, shading, etc.) on the dominant property. An overview of the approaches and the methods shows certain compatibility and intertwining, but certainly, the research in Slovenia breaks down the myth about the “method of thumb” and the overall 30% decrease in the value of the land is due to the real easiness.

**Keywords:** Real estate, Valuation of real estate, Real easiness, Slovenia

## 1. Osnovne zakonske podlage in dileme v Sloveniji

Stvarnopravni zakoni (v nadaljevanju SPZ) (Uradni list RS, št. 87/2002) v svojem 213. členu pojasnjuje, da je stvarna služnost pravica lastnika nepremičnine (gospodujoča stvar), izvrševati za njene potrebe določena dejanja na tuji nepremičnini (pozitivna služnost) ali zahtevati od lastnika služeče stvari, da opušča določena dejanja, ki bi jih sicer imel pravico izvrševati na svoji nepremičnini (negativna služnost). Lahko je ustanovljena za določen čas ali za določen letni čas. V 214. členu pa navaja, da stvarna služnost nastane z zakonom, na podlagi pravnega posla ali z odločbo državnega organa. 215. člen pa navaja, da mora pogodba o ustanovitvi služnosti vsebovati ime lastnikov gospodujoče in služeče nepremičnine, zemljiškoknjižno oznako obeh nepremičnin, natančen opis služnosti in morebitno nadomestilo, ki ga mora plačati lastnik gospodujoče nepremičnine. Nadomestilo se lahko določi v enkratnem znesku ali v periodično zapadlih obrokih. Lastnik služeče stvari mora v izvrševanju oblasti nad svojo stvarjo nekaj trpeti, čeprav je izvrševanje vsebine služnosti omejeno samo na del služeče nepremičnine (Juhart, 2003; Tratnik, 2010).

Za ocenjevanje vrednosti stvarne služnosti je pomemben tudi 219. člen, ki pravi, da če je za izvrševanje stvarne služnosti potrebna uporaba kakšne naprave ali je potrebno kakšno dejanje, krije stroške vzdrževanje ali takega dejanja lastnik gospodujoče stvari. Če napravo uporablja tudi lastnik služeče stvari ali je dejanje tudi v njegovem interesu, krijeta stroške vzdrževanja takšne naprave in stroške takega dejanja lastnik gospodujoče in lastnik služeče stvari v sorazmerju s koristjo, ki jo imata. Neprava stvarna služnost pa je služnost, ki je po svoji vsebini stvarna služnost in se lahko ustanovi tudi v korist določene osebe (226. člen). Po SPZ poznamo: osebne služnosti, užitek, raba, služnost stanovanja, stvarno breme, stavbna pravica.

Zakon o urejanju prostora (v nadaljevanju ZUreP) (Uradni list RS, št. 110, 2002) v svojem 92. členu navaja, da se nepremičnina lahko razlasti za naslednje namene: za gradnjo ali prevzem objektov oziroma zemljišč gospodarske javne infrastrukture; za gradnjo ali prevzem objektov oziroma zemljišč za potrebe obrambe države, državnih rezerv, varnosti državljanov in njihovega premoženja ter varstva pred naravnimi in drugimi nesrečami. Nepremičnina pa lahko razlasti tudi za naslednje namene: za gradnjo ali prevzem objektov oziroma zemljišč za potrebe izvajanja javnih služb na področju zdravstva, vzgoje, šolstva, kulture, znanosti in raziskovanja ter socialnega varstva; za gradnjo socialnih in neprofitnih stanovanj; za rekonstrukcije in rušitve po predpisih o graditvi objektov na objektih iz prvih dveh točk tega odstavka. Šteje se, da je javna korist za nepremičnine izkazana, če so predvidene v državnem oziroma občinskem lokacijskem načrtu. Javna korist izkazana tudi, kadar je načrtovana rekonstrukcija oziroma rušitev v skladu s prostorskim redom občine. Ne glede na določbe tega člena, se nepremičnine lahko razlastijo za namene, ki jih določajo drugi zakoni. V tem primeru se za postopek razlastitve in omejitve lastninske pravice ter za odškodnino uporabljajo določbe tega zakona, če zakon ne določa drugače (Uradni list RS, št. 110/02, 8/03 - popr., 58/03 - ZZK-1, 33/07 - ZPNačrt, 108/09 - ZGO-1C in 80/10 - ZUPUDPP: ZUreP-1-NPB4). Za ocenjevanje vrednosti nepremičnine oz. odškodnin je pomemben 105. člen, ki pravi, da lastniku pripada za razlaščenno nepremičnino ustrezna odškodnina oziroma enakovredna nadomestna nepremičnina. Odškodnina obsega vrednost nepremičnine glede na njeno dejansko rabo in stranske stroške, povezane z razlastitvijo, kot so selitveni stroški, izgubljeni dobiček za čas selitve in morebitno zmanjšano vrednost preostale nepremičnine. 107. člen pa navaja, da v primeru, da se odvzame lastninska pravica na stavbi oziroma delu stavbe, ki ga razlaščenec uporablja kot stanovanje, mora razlastitveni upravičenec zagotoviti razlaščencu lastninsko pravico na enakovredni stavbi oziroma delu stavbe, razen če razlaščenec zahteva odškodnino v denarju. Smiselno se enaka določila uporabljajo za nepremičnine, ki predstavljajo osnovna sredstva za opravljanje poklicne ali kmetijske dejavnosti razlaščenca.

Zakon o umeščanju prostorskih ureditev državnega pomena v prostor (Uradni list, št. 80/2010, 106/010-popravek in 57/2012) predvideva za ocenjevanje nepremičnin sprejem Uredbe metodologiji ocenjevanja vrednosti nepremičnin, pravic na nepremičninah, nadomestil za škodo in drugih stroškov



kot to določajo členi 55. do 58. tega zakona. Zakon v svojem 55. členu navaja, da cenilec pri ocenjevanju vrednosti upošteva:

- podatke o nepremičninah in o njihovi posplošeni tržni vrednosti, ki se v skladu s predpisi o evidentiranju nepremičnin in predpisi o množičnem vrednotenju nepremičnin vodijo v javnih evidencah, in druge podatke, ki jih pridobi od lastnikov nepremičnin oziroma nosilcev pravic na njih,
- metodologije ocenjevanja vrednosti in
- mednarodne standarde ocenjevanja vrednosti (v nadaljevanju MSOV),
- pri čemer navaja, da metodologije iz druge alineje tretjega odstavka tega člena predpiše vlada z uredbo.

Iz navedenega je torej sklepati, da bi cenilec / ocenjevalec moral upoštevati prvič, posplošeno vrednost nepremičnine, drugič predpisano metodologijo ocenjevanja vrednosti in tretjič veljavne MSOV. Predpisano metodologijo ocenjevanja vrednosti naj bi urejala Uredba o ocenjevanju vrednosti nepremičnin, pravic na nepremičninah, nadomestil za škodo in drugih stroškov. Osnutek uredbe je dne 30. 10. 2012 pripravila Geodetska uprava Slovenije, nanj pa je že bilo podanih vrsto konstruktivnih pripomb. Zakon o množičnem vrednotenju nepremičnin (Ur.l.RS, št. 50/2006) je začel veljati 21. maja 2006. Zakon se je pripravil na podlagi spoznanj, izkušenj in rešitev, pridobljenih v okviru podprojekta »Razvoj sistemov obdavčenja in vrednotenja nepremičnin«, ki se je v Sloveniji kot del kompleksnejšega projekta »Posodobitev evidentiranja nepremičnine«, izvajal v letih 1999 – 2005. V okviru tega podprojekta je bil, po vzoru praks v razvitih ekonomijah, za namene davka na nepremičnine izdelan koncept sistema množičnega vrednotenja. V evropskih državah se sistem množičnega vrednotenja nepremičnin torej uporablja v glavnem za določanje davčen osnove nepremičnine, v državah, kjer pa imajo na tem področju dolgo tradicijo (kamor Slovenija zagotovo ne spada), pa je podatek uporaben tudi na primeru za sistem hipotekarnih kreditov, za ocenjevanje nepremičnine v primerih dedovanja, odškodnin, itd. Slovenija zagotovo ne spada med države, kjer ima sistem množičnega vrednotenja dolgo tradicijo. Navedeno potrjujejo datumi sprejetja zakonov, ki urejajo sisteme vrednotenja nepremičnin za potrebe davka, po različnih državah:

Država	Zakon	Datum uveljavitve
Danska	Danish Valuation Law	1984
Švedska	Real Property Assessment Act	1979
Velika Britanija	General Rate Act; Lokal Government and Housin Act	1967; 1989
Nizozemska	Wet Waardwring Onroende Zaken	1994

Že s tega vidika je torej vprašljivo, ali je uporaba posplošene vrednosti, kot to predpisuje ZUPUDOO, smiselna in upravičena.

Drugi problem, ki se tu pojavlja pa je, kako točne so ocene vrednostni nepremičnin, ki jih podaja sistem množičnega vrednotenja in ali so te ocene, in v kolikšni meri so, uporabne pri postopkih ocenjevanja premoženja pri prisilnem razlastnitvenju. Na te postopke je potrebno gledati skrajno resno. S temi postopki se posega v lastninsko pravico ljudi, katerim je le ta lahko življenjskega pomena. Po drugi strani gre običajno za velike vrednosti ali denarne ekvivalente, ki marsikateri stranki lahko pomenilo življenjske prihranke ali praktično celotno osebno (družinsko) imetje. Že s tega vidika menimo, da posploševanje ni dobro in ne vodi v spravno reševanje te problematike. Slovenija je premajhna, da bi lahko na podlagi referenčnih transakcij razvila dovolj zanesljiv in pravičen posplošen model vrednotenja nepremičnin v postopkih razlastitve. Nemško sodišče je v svoji sodbi posebej poudarilo, da se tržna vrednost stvarnih pravic mora ocenjevati po vsakokratnih okoliščinah, ki so pomembne za presojo vrednosti (KG Berlin, Urteil vom 10.07.1967 – 485/67 Baul).

Z vidika ocenjevanja vrednosti pravic na nepremičnini se iz orisa glavnih zakonskih okvirjev nakazuje problematika pri ocenjevanju vrednosti zaradi omejitve (spremembe) pravic na nepremičnini.

Poenostavljeno, gre za problem ocenjevanja vrednosti služnosti ali nadomestila oz. spremembo vrednosti nepremičnine zaradi ustanovitve služnosti. V skrajnih primerih pa, ko služnost zaradi zakonsko dopustnih posegov v prostor ne zadostuje, pa se pojavi problem ocenjevanja vrednosti pravic na nepremičnini (v nadaljevanju ocenjevanje vrednosti nepremičnine) zaradi razlastitve.

V obeh primerih, tako pri služnosti kot pri razlastitvi, pa v večini primerih govorimo o ocenjevanju za potrebe javnega interesa.

Prepletajo se torej trije glavni problemi vrednotenja:

- vrednotenje v primeru stvarne služnosti;
- vrednotenje nepremičnin za javni interes ali v postopku razlastitve;
- vrednotenje stavbne pravice.

V nadaljevanju se osredotočimo na vrednotenje v primeru stvarne služnosti.

## 2. Metodologija

Uporabili smo metodo sistematičnega pristopa po naslednjih korakih:

- a) raziskovalna domneva po stopnjah
  - domnevamo, da so možni različni pristopi k vrednotenju indicirane vrednosti v primeru stvarne služnosti,
  - posledično želimo ugotoviti, kateri so pristopi, ki se najbolj povezujejo z učinkovito rabo prostora, so v praksi najbolj uporabljeni in jih doktrina ocenjevanja vrednosti nepremičnin priznava.
- b) opredelitev vključitvenih kriterijev
  - izvirni ali pregledni znanstveni članek, zajet v naslednjih iskalnih bazah digitalne knjižnice: cienceDirect, Features, Emeraldinsight, Springerlink in Elsevier.
  - ločeno so pregledane še domače znanstvene revije s področja in sicer Geodetski vestnik, Urbani izziv in Lex Localis.
  - doktorske disertacije so izključene,
  - jasne metode in statistični podatki podpirajo glavne ugotovitve,
  - vsebovane ključne besede v naslovu, povzetku, kazalu vsebine, pripomočkih ali v jedrnem besedilu.
- c) iskanje in izbor študij
  - izhajamo iz raziskav iz obdobja 2007 – 2017 in pridobili smo več kot 1.000 publikacij,
  - glede na podvajanje nekaterih publikacij v različnih bazah, smo večkrat pojavljajoče se iste publikacije izločili in jih upoštevali kot enkratne,
  - po pregledu publikacij smo se odločili za izbor, ki po našem mnenju doprinese izvirnost v metodologiji. Pri tem smo upoštevali tudi izvirne članke, ki so v referirani (citirani) v izboru.
  - zaradi boljše preglednosti smo članke in monografije razvrstili glede na posamezne združljivostne skupine, za katere se je izkazalo, da so najpogostejši predmet proučevanja.

Preglednica 1: *Izbor prikaza mreženja zadetkov na izhodiščni izraz »nepremičnine in stvarna služnost*

Ključne besede	Baza
Nepremičnine	1003
Stvarna služnost	119

## 3. Vrednotenje v primeru stvarne služnosti

Teorija vrednotenja nepremičnin (Kleiber, 2010) obravnava vrednotenje stvarne služnosti z dveh vidikov, in sicer:



- a) stvarno služnost v smislu bremena obravnava kot neobičajno okoliščino oziroma pravno značilnost, ki vpliva na spremembo vrednosti ocenjevanega zemljišča,  
b) stvarno služnost obravnava zaradi določitve nadomestila samostojno kot predmet vrednotenja.








Vrst služnostnih pravic je veliko, najpogosteje pa v praksi srečujemo:

- služnost zračnega prostora za zračni promet;
- služnost uporabe železniškega prostora;
- služnost komunalnih vodov (kanalizacija, vodovod, elektrika, ipd...);
- »pravica poti« ter služnost nujne poti;
- služnost »pločnika«;
- služnost »pogleda«;
- služnost spomeniškega varstva ter narave;
- komunikacijska služnost (radijski oddajniki, letališki stolpi, ipd...);
- služnost dostopa do morja/jezera.

Sherwood (2014) ločuje tri kategorije služnosti:

- nadzemna
- površinska
- podzemna služnost.

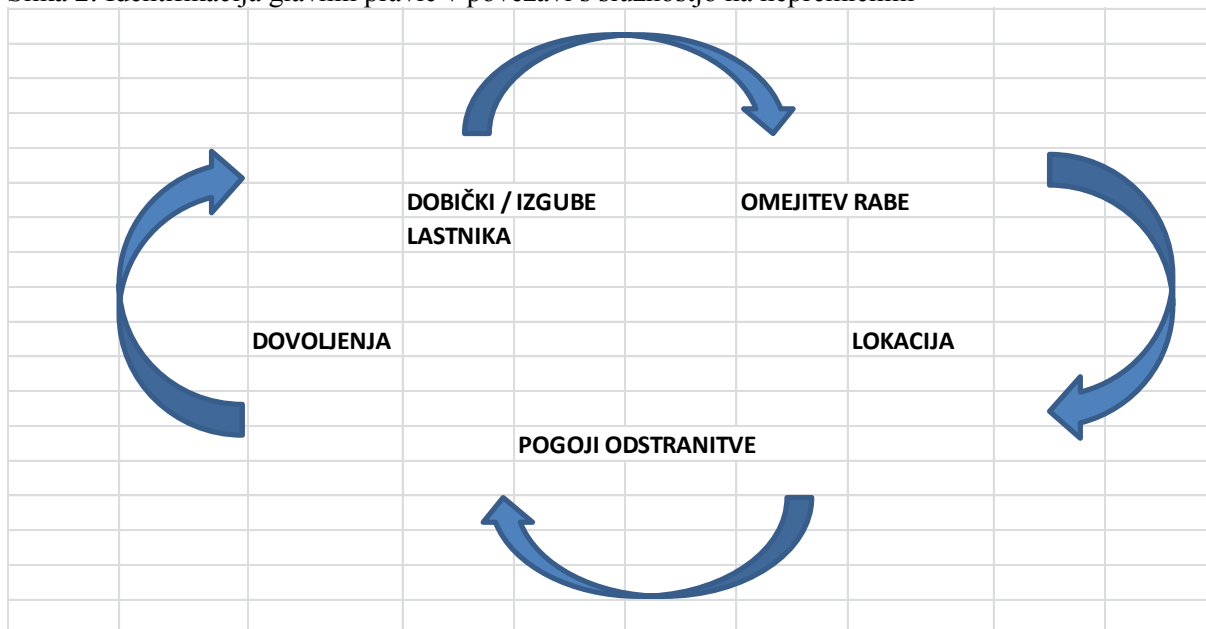
Slika 1: Kategorije služnosti

Kategorije služnosti			
Nadzemne			
	zračni kabelski vodi	vetrne elektrarne	...
Površinske			
	razglede točke (spomeniki)	služnost dostopa	železnica
Podzemne			
	instalacijski vodi	podzemna infrastruktura	...

Pri vrednotenju se pojavlja vrsto vprašanj. Ena najpomembnejših stvari je, da ocenjevalec korektno identificira vse pravice na nepremičnini ter ugotovi, kako bo služnost vplivala na nadaljnjo uporabo

nepremičnine (npr. ali lahko lastnik uporablja površino nad/pod s služnostjo obremenjenim delom zemljišča, npr. za prehod, parkiranje, ipd.). Pomembno je ugotoviti, kje bo služnost potekala (lokacija). Različne lokacije povzročajo različne obremenitve nepremičnine. Pomembno je definirati časovno omejitev služnosti (stala, začasna). Šnajberk (20015) vse navedene pravice, ki so med seboj močno povezane, prikaže v krožnem diagramu (slika 2).

Slika 2: Identifikacija glavnih pravic v povezavi s služnostjo na nepremičnini



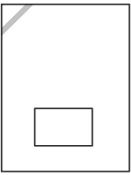
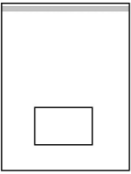
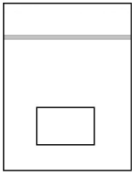
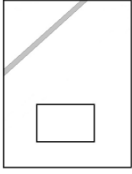
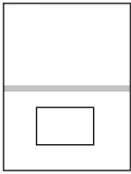
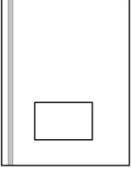
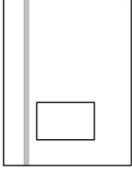
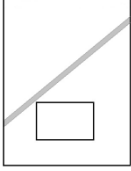
Najpomembnejše je gotovo to, kako bo služnost vplivala na nepremičnino in njeno nadaljnjo rabo. Pomembno je, kje je služnost locirana (ob robu parcele, na zadnjem delu ali preko parcele, ipd.). Pomembno je trajanje služnosti in ali se služnost lahko potem odstrani in s kolikšnimi stroški je to povezano. Ali lahko lastnik področje služnosti uporablja (prečka, delno pozida, ipd.) ? Ali je to povezano z dovoljenju, pogodbenimi dogovori ? Vse navedeno lahko za lastnika pomeni izgubo ali dobiček vezano na ustanovitev služnosti. Identifikacija in medsebojna povezanost glavnih pravic s služnostjo na nepremičnini je zato ključnega pomena za vrednotenje le teh.

V literaturi zasledimo vrsto pristopov k reševanju vrednostnega problema služnosti. Stopar in Šubic Kovač (2016) navajata, da se sprememba vrednosti zemljišča zaradi stvarne služnosti ocenjuje na podlagi primerjave prodajnih cen nepremičnin z enako obremenitvijo oziroma ugodnostjo ali pa se izhaja iz ocene vrednosti nepremičnin brez stvarne služnosti in na podlagi faktorjev prilagoditve oceni vrednost nepremičnine s stvarno služnostjo. Stopa in Šubic Kovač (2016) sta v zvezi s tem skušali odgovoriti na raziskovalna vprašanja:

- Katere značilnosti stvarne služnosti vplivajo na vrednost zemljišča in katere metode se uporabljajo za ocenjevanje tega vpliva?
- Kako prebivalci Republike Slovenije ocenjujejo zmanjšanje vrednosti zemljišča zaradi stvarne služnosti v posameznih primerih?

Za raziskavo javnega mnenja o zmanjšanju vrednosti zemljišča, ki je obremenjeno s stvarno služnostjo, sta uporabili terensko anketiranje (intervju). Ker pa je raziskava izvedena na relativno majhnem vzorcu udeležencev (n=203), je potrebno rezultate interpretirati z zadržanostjo. Pri tem sta uporabili razzvrstitev primerov glede na obseg služnosti in obremenjevanje zemljišča glede na lego kot to prikazuje spodnja shema:

Preglednica 2: Razvrstitev primerov glede na obseg služnosti in obremenjevanje zemljišča glede na lego

	<b>Manjše obremenjevanje rabe zemljišča</b>	<b>Delno omejevanje rabe zemljišča</b>	<b>Večje omejevanje rabe zemljišča</b>
Manjši obseg služnosti			
Srednji obseg služnosti		 	
Večji obseg služnosti			

Rezultati njune raziskave so prikazani v preglednici 3.

Preglednica 3: Zmanjšanje vrednosti zemljišča v (%) glede na vrsto služnosti, obseg služnosti in omejevanje rabe zemljišča

<b>Manj moteče vrste služnosti</b>	<b>Manjše omejevanje rabe zemljišča</b>	<b>Delno omejevanje rabe zemljišča</b>	<b>Večje omejevanje rabe zemljišča</b>
Manjši obseg služnosti	2 %	8 %	17 %
Srednji obseg služnosti	2,5 %	12 %	25 %
Večji obseg služnosti	6 %	25 %	30 %
<b>Srednje moteče vrste služnosti</b>	<b>Manjše omejevanje rabe zemljišča</b>	<b>Delno omejevanje rabe zemljišča</b>	<b>Večje omejevanje rabe zemljišča</b>
Manjši obseg služnosti	4 %	14 %	28 %
Srednji obseg služnosti	5 %	17 %	35 %
Večji obseg služnosti	10 %	35 %	41 %
<b>Zelo moteče vrste služnosti</b>	<b>Manjše omejevanje rabe</b>	<b>Delno omejevanje rabe</b>	<b>Večje omejevanje rabe</b>

	<b>zemljišča</b>	<b>zemljišča</b>	<b>zemljišča</b>
Manjši obseg služnosti	6 %	20 %	40 %
Srednji obseg služnosti	7 %	23 %	46 %
Večji obseg služnosti	14 %	46 %	52 %

Avtorici tudi ugotavljata, da rezultati statistične analize kažejo, da odgovori anketirancev niso odvisni od kraja bivanja, zaradi česar je matrika lahko uporabna za oceno zmanjšanja vrednosti zemljišča v primeru stvarne služnosti v vseh statističnih regijah v Republiki Sloveniji. Vsekakor pa razbija mit o metodi na palec in 30% zmanjšanju vrednosti zemljišča zaradi stvarne služnosti v Republiki Sloveniji (Stopar, Šubic Kovač, 2016).

Pri identifikaciji stvarne služnosti je torej poleg vrste služnosti opredeliti tudi značilnosti omejitve lastninske pravice zaradi služnosti glede na lego in obseg stvarne služnosti znotraj celotnega služnega zemljišča, zmanjšano rabo celotnega služnega zemljišča, možnosti za ukinitve stvarne služnosti in pogoje za njeno ukinitve ter časovni značaj služnosti (Šnajberg, 2015). Pomembno je tudi upoštevati, da se najgospodarnejša raba prvotnega zemljišča lahko z ustanovitvijo stvarne služnosti spremeni, vendar se to spremembo upošteva le, če jo je utemeljeno pričakovati (Allen, 2001). Nadomestilo, določeno po pravnih predpisih (npr. Pravilnik o metodologiji za določanje nadomestil za služnosti na vodnih in priobalnih zemljiščih v lasti Republike Slovenije (Ul. RS št.35/2011)), oziroma dogovorjeno nadomestilo pa nujno ne odraža vseh vplivov stvarne služnosti na vrednost nepremičnine, predvsem če zakon predpisuje elemente, ki jih je treba upoštevati pri vrednotenju in ti ne zajemajo vseh možnih vplivov stvarne služnosti na vrednost, oziroma če cenilci pri njihovem ocenjevanju ne upoštevajo načel tržnega vrednotenja nepremičnin in vsak po svoje oceni prilagoditve brez ustrezne utemeljitve, torej subjektivno (Stopar, Šubic Kovač, 2016). Navedeno torej pomeni, da morajo cenilci strokovno utemeljiti izhodišča vrednotenja ter razumljivo argumentirati posamezne prilagoditve.

Kot ugotavljata Stopar in Šubic Kovač (2016) se je v slovenski praksi uveljavilo ocenjevanje zmanjšanja tržne vrednosti zemljišča in tudi nadomestila za stvarno služnost "na palec". Za zmanjšanje vrednosti zemljišča se pogosto uporablja nenapisano in neargumentirano "pravilo 30%", in sicer v dveh variantah: ali kot 30% zmanjšanje vrednosti celotnega zemljišča ali kot samo dela zemljišča, na katerega se nanaša služnost. Najbolj transparentna in teoretično utemeljena se zdi Sherwoodova metoda (2006, 2014), ki je uporabil diferenčno metodo in analiziral primerljive prodaje zemljišč brez in s služnostjo. Za kmetijska zemljišča se je v praksi oblikoval model (Lovrin et al., 2012), po katerem znaša odškodnina pri vkopanih vodih 33% vrednosti zemljišča, če so vodi vkopani, oziroma 20% vrednosti zemljišča, če so vodi zračni. Služnostni upravičenec je dolžan poravnati tudi dejansko škodo v povezavi z vzpostavljeno služnostjo. Nekoliko bolj zapletena metoda ocene nadomestila za stvarno služnost "na palec" je Žlajpahova metoda (Stopar, 2013), po kateri na višino nadomestila za stvarno služnost vpliva izhodiščna tržna vrednost zemljišča, obdobje trajanja služnosti in skupna stopnja obremenjenosti zemljišča, to je vsota stopenj glede na pravni status, obremenjenost, delež obremenjenega dela zemljišča in vrsto objekta. Posamezne vrednosti so določene v razmeroma širokih intervalih, zato je odločitev za eno izmed vrednosti znotraj intervala težko argumentirati (Stopar, Šubic Kovač, 2016).

Kot navajata Uhlir in Majčica (2016) pa je pomembno razumeti, da se služnost običajno res izvršuje samo na delu nepremičnine, vendar pa to vpliva na celo nepremičnino. Po drugi strani pa vrednost pozitivne služnosti ni identična z vrednostjo negativne služnosti. Na hrvaškem model ocenjevanja vrednosti s služnostjo obremenjenih zemljišč predpisuje Zakon o proceni vrijednosti nekretnina (NN 78/15, (v nadaljevanju ZPVN)), ki v 29. členu podaja koeficiente za preračunavanje vrednosti služnosti poti in v 34. členu koeficiente za preračunavanje vrednosti infrastrukturnih vodov.

Preglednica 4: Koeficienti za preračunavanje vrednosti služnosti poti (ZPVN)

Opis služnosti			Koeficient		Koeficient	
			stanovanjska namembnost		poslovna namembnost	
Vrsta služnosti	Dovoljene	Stopnja obremenitve	Odstotek	Koeficient	Odstotek	Koeficient
Pešpot	hoja, peš dostop	majhna	10-30	0,10-0,30	10-20	0,10-0,20
Vozna pot	vožnja z motornimi vozili	srednja do intenzivna	30-70	0,30-0,70	20-55	0,20-0,25
Parkiranje (zajema tako pešpot kot vozno pot)	vse pravice pešpoti in vozne poti vključno z možnostjo parkiranja	možna Obremenitev	70-80	0,70-0,80	55-80	0,55-0,80

Preglednica 5: Koeficienti za preračunavanje vrednosti služnosti infrastrukturnih vodov (ZPVN)

Stopnja obremenitve	Koeficient		Koeficient	
	stanovanjska namembnost		poslovna namembnost	
	Odstotek	Koeficient	Odstotek	Koeficient
majhna obremenitev	10-30	0,10-0,30	10-20	0,10-0,20
srednja do intenzivna	30-70	0,30-0,70	20-55	0,20-0,25
možna obremenitev	70-80	0,70-0,80	55-80	0,55-0,80

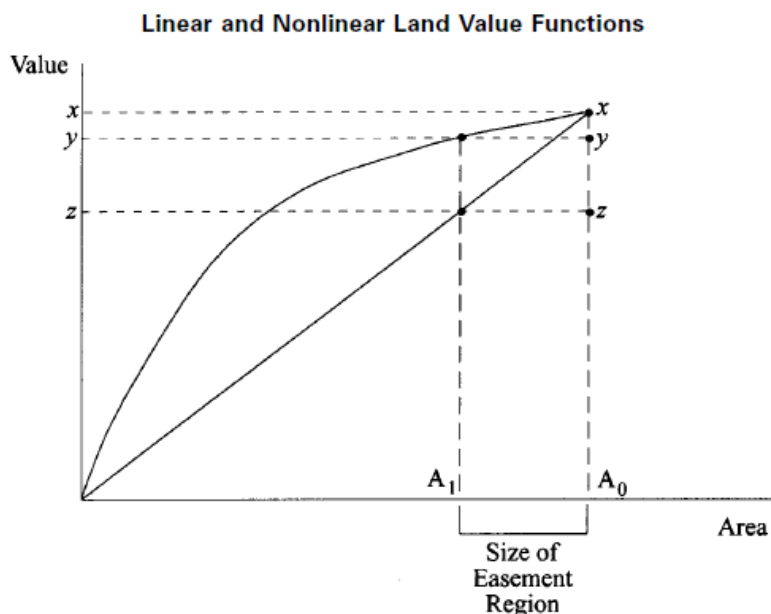
Sherwood (2006) je na podlagi analize večjega števila primerjav parov dveh enakih nepremični, od katerih je ena brez obremenitev druga pa obremenjena s služnostjo, izdelal matriko, ki prikazuje generalne trende odbitkov. Matriko je preveril tudi z intervjuji med prodajalci in kupci.

Preglednica 6: Matrica odbitkov zaradi obremenitve s služnostjo (Sherwood, 2006)

Tip obremenitve	Stopnja obrnenitve	Odstotek
Manjša podzemna obremenitev	Nominalni vpliv na uporabnost	0 % - 10 %
Zračni vodi ali kanalizacija	Podzemni ali zračni vodi z minimalnim vplivom na uporabnost in lokacijo v zaledju	11 % - 25 %
Vodovod, kanalizacija, zračni vodi	Lokacija vzdolž linije parcele, lokacija preko neuporabnega dela parcele	26 % - 49 %
Vodovod, kanalizacija, zračni vodi, telekomunikacija	Večja obremenitev. Uravnotežena uporabo lastnik in uporabnik služnosti	50%
Cevovodi, razgledne točke ali podobne atraktivne obremenitve	Velik vpliv, tudi poseg v pravice celotne nepremičnine	51 % - 74 %
Cebvovodi	Bistven vplvi na površinsko uporabo parcele	75 % - 89 %

Munneke in Trefzger (1998) sta razvila nekaj formul za splošno vrednotenje odškodnine za služnost. Avtorja svoj prispevek k vrednotenju služnostnih nepremičninskih situacij v grobem označita kot »rules of thumb« (pravila palca), ki je v ameriški literaturi mnogokrat uporabljena fraza in ne pomeni nič drugega kot enostavno to, da gre za pravila oziroma postopke namenjena široki uporabi z nizko zanesljivostjo za posamezne specifične primere. Avtorja razvijeta sorazmerno preproste postopke za približen izračun oziroma vrednotenje odškodnine za služnostno pravico (pot), ki so bila razvita kot pomoč nepremičninskim cenilcem. V čisti osnovi je v preteklosti sledeča ekonomska analiza temeljila na ideji vrednotenja odškodnine za služnost na podlagi določenega oziroma fiksnega odstotka od vrednosti služeče parcele. Avtorja pa postavita zaključno ugotovitev, da od te metodologije ne moremo pričakovati, da bi v splošnem pri večini primerov prinesla učinkovite oziroma relevantne rezultate. Njun začetni pristop k vrednotenju odškodnine za služnost je baziral na fiksnih odstotkih vrednosti služeče parcele (od 0% do 100%), glede na obremenitev, ki jo služnostna pravica povzroča služeči parceli. Na primer, ocenjevalci so uporabljali geometrijske formule pri računanju takih fiksnih odstotkov pri vrednotenju služnosti komunalnih državnih podjetij, ki so za služnosti npr. kanalizacije ponujala lastnikom »prizadetih« parcel plačilo oziroma odškodnino v višini 10% do 15% ocenjene vrednosti zemljišča za pridobitev začasne služnosti. Eno pravilo palca, ki je bilo včasih veliko uporabljano v sodnih sporih in postopkih, je bilo vrednotenje odškodnine za služnostno pot v višini 25% vrednosti »hipotetičnega užitka« vkoličine zemlje, ki obsega služnost. Pravilo je bilo v praksi v uporabi že vsaj od leta 1950 naprej (Wall, 1952). Avtorja zatorej sprva poskušata odpraviti oziroma vključiti v formulo za vrednotenje odškodnine za služnost idejo, da je odškodnina za služnostno zemljišče pri večjih površinah na 1m<sup>2</sup> manjša kot pri manjših površinah. V sledeči sliki je prikazan graf, ki prikazuje linearno in nelinearno rast cene zemljišč. V praksi delovanja nepremičninskega trga seveda obstaja nelinearna rast vrednosti zemljišč, katerih vrednost v absolutnem znesku z rastjo površine zemljišča seveda raste, a v podproporcionalnem razmerju. Na grafu ravna črta kaže linearno rast vrednosti zemljišč glede na velikost zemljišča, zgornja ukrivljena črta pa realno nelinearno rast vrednosti zemljišč glede na obseg. Slednje dejstvo je bila tudi osnova za nadgradnjo fiksnih odstotkov vrednotenja služnosti iz preteklosti, ki tega dejstva ni upošteval.

Slika 3: Linearna in nelinearna funkcija vrednosti zemljišča



$A_0$  = površina gospodujoče parcele

$A_1$  = površina gospodujoče parcele, ki ni služnostno obremenjena

Nelinearno vrednostno funkcijo avtorja v osnovi zapišeta kot:

$$V = cA^\beta$$

Pri čemer je:

$V$  – vrednost obravnavanega zemljišča za služnost

$c$  – vpliv na vrednost zemljišča s strani dejavnikov neodvisnih oziroma nepovezanih z velikostjo parcele

$A$  – velikost gospodujočega zemljišča

$\beta$  – elastičnost cene zemljišča (razmerje med relativno spremembo cene in relativno spremembo velikosti zemljišča; če je  $\beta$  enak 1 to pomeni, da se pri spremembi velikosti zemljišča za  $x$  odstotkov tudi vrednost zemljišča poveča za  $x$  odstotkov; če je  $\beta$  enak 0 pomeni da se pri povečanju obsega zemljišča vrednost zemljišča ne poveča; v praksi je  $\beta$  nekje med 0 in 1, pravičen izbor vrednosti  $\beta$  pa je empirično vprašanje, na katerega avtorja ne odgovorita in je ena izmed pomanjkljivosti njune formule vrednotenja – več v nadaljevanju)

V grafu je vidno, da v osnovi avtorja označita celotno gospodujočo parcelo z  $A_0$ , ki ji pripada skupna vrednost zemljišča  $x$  ter vrednost parcele neobremenjene s služnostjo  $A_1$ , ki ji pripada vrednost zemljišča  $y$ . Znesek  $(x - y)$  bi zatorej ocenjeval vrednost odškodnine za služnost, v kolikor bi lastnik gospodujoče parcele menil, da mu je ustanovitev služnosti popolnoma odvzela pravice na območju dogovorjene poti. V primeru linearne funkcije bi bila odškodnina v vrednosti  $(x - z)$ . Če bi želeli iz enostavne linearne funkcije preiti na nelinearno bi morali odškodnino  $(x - z)$  množiti z nekim odstotkom  $s$ . Primerna kompenzacijska vrednost bi bila v tem primeru  $C = (x - y) = (s) \cdot (x - z)$ , spet v primeru da lastnik ocenjuje služnostno pot kot popolno izgubo vrednosti obravnavanega zemljišča.

Razlika pri izračunavanju po linearni in nelinearni metodi je očitna. Primer: Velikost gospodujočega zemljišča je 20 ha ( $A_0$ ), velikost neslužkečega dela pa 16 ha ( $A_1$ ). Vrednost zemljišča je 2500 \$/ha.

Linearno:  $(x - z) = (50.000 - 40.000) = 10.000 \$$

Nelinearno: ( $s = 25\% \rightarrow \beta = 0,23$ );  $(x - y) = (50.000 - 47.500) = (s) \cdot (x - z) = 2.500 \$$

$s = 25\%$  avtorja uporabita zaradi napovedane pretekle uporabe pravil palca iz fiksnih odstotkov računanja služnostne obremenitve. Gre za primer iz katerega je  $\beta$  enak 0,23.



Avtorja navajata, da je uporaba pravila fiksnih odstotkov neučinkovita zaradi različnih problemov.

1. Koliko je  $s$  oziroma  $\beta$  je ključno vprašanje in ne more biti fiksni znesek ( $s$  ne mora biti vedno 25%), ampak mora biti to številka, ki se spreminja z velikostjo  $A_0$ ,  $A_1$  in  $\beta$ . Pravo vrednost koeficienta  $s$  lahko izračunamo preko formule:

$$s = \frac{1 - (A_1/A_0)^\beta}{1 - (A_1/A_0)}$$

V našem primeru je  $s = 25\%$  samo takrat ko je  $\beta = 0,23$ , kar je nerealistično nizka postavka beta koeficienta. Če bi bil beta npr. 0,5 bi pravilne vrednosti  $s$  faktorja variirale od 51,3% do 76 %. In tudi če bi bila postavka  $\beta = 0,23$  realistična, bi bil  $s = 25\%$  spet samo takrat, ko bi bil koeficient  $A_1/A_0$  enak 0,8. Iz naslednje tabele je razvidno, da fiksni odstotek pravila palca ne more biti merodajen instrument v primeru širokega izbora različnih primerov vrednotenja odškodnin za služnost.

Preglednica 7: Vrednost  $s$

Calculation of $s$									
$A_1/A_0$	Beta								
	0.23	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
0.9	0.239	0.311	0.413	0.513	0.613	0.711	0.808	0.905	1.000
0.8	0.250	0.324	0.427	0.528	0.627	0.723	0.817	0.910	1.000
0.7	0.263	0.338	0.443	0.545	0.642	0.737	0.828	0.915	1.000
0.6	0.277	0.355	0.462	0.564	0.660	0.752	0.839	0.921	1.000
0.5	0.295	0.376	0.484	0.586	0.681	0.769	0.851	0.928	1.000
0.4	0.317	0.401	0.511	0.613	0.705	0.789	0.866	0.936	1.000
0.3	0.346	0.433	0.546	0.646	0.735	0.814	0.883	0.945	1.000
0.2	0.387	0.479	0.593	0.691	0.774	0.845	0.905	0.956	1.000
0.1	0.457	0.554	0.669	0.760	0.832	0.889	0.935	0.971	1.000

2. Drugi, še večji problem, pa je dejstvo, da služnostne poti v različnih primerih različno obremenijo in razvrednotijo vrednost gospodujoče parcele. V večini primerov bi bila vrednost gospodujoče parcele na območju služnostne poti še vedno nekaj vredna in za lastnika gospodujoče parcele ne bi pomenila popolne izgube vrednosti. Odškodnina za služnost bi morala biti zato manjša od  $(x - y)$ . Avtorja zato vneseta neznanko  $k$ , ki predstavlja zaznano oziroma ocenjeno breme na gospodujoči parceli, ustvarjeno s služnostno pravico. V tem primeru bi morala biti odškodnina za služnost  $C = k \cdot (x - y) = (k) \cdot (s) \cdot (x - y)$ . Če lastnik gospodujočega zemljišča ustanovitev služnosti smatra kot popolno razvrednotenje zemljišča namenjenega služnostni poti, potem je  $k = 1$ . V splošnem pa bi moral biti  $k < 1$ .

Uporaba formule  $C = k \cdot (x - y) = (k) \cdot (s) \cdot (x - y)$  pa je lahko zelo podcenjujoča, saj se npr. pri fiksnem odstotku 25% ( $k=0,25$ ;  $s=0,25$ ) vsaka izračunana odškodnina praktično zmanjša za 75% ( $k \cdot s = 0,0625$ ).

V sledeči tabeli avtorja prikazujeta izračun faktorja  $k$  ob primeru  $\beta=0,23$  in  $\beta=0,5$  ob različnih faktorjih  $A_1/A_0$  in fiksnih zelenih odstotkih pravila palca. Tabela nakazuje, da bi bili faktorji  $k$  v večini primerov večji od 1, kar je nelogično saj zahteva od cenilca, da oceni oziroma vrednoti odškodnino za služnost v višini, ki je večja od vrednosti te obremenjene parcele (tabela).



Preglednica 8: Implicitni k odstotek do višine, ki se kompenzira s pravilom »na palec«

Implied $k$ Percentage of True Fee Simple Value Compensated by a Fixed Percentage Rule of Thumb											
$A_1/A_0$	% Rule of Thumb										
	0.20	0.25	0.30	0.40	0.50	0.60	0.70	0.75	0.80	0.90	1.00
Panel A: $\beta = 0.23$											
0.9	0.84	1.04	1.25	1.67	2.09	2.51	2.92	3.13	3.34	3.76	4.18
0.8	0.80	1.00	1.20	1.60	2.00	2.40	2.80	3.00	3.20	3.60	4.00
0.7	0.76	0.95	1.14	1.52	1.90	2.29	2.67	2.86	3.05	3.43	3.81
0.6	0.72	0.90	1.08	1.44	1.80	2.17	2.53	2.71	2.89	3.25	3.61
0.5	0.68	0.85	1.02	1.36	1.70	2.04	2.38	2.54	2.71	3.05	3.39
0.4	0.63	0.79	0.95	1.26	1.58	1.89	2.21	2.37	2.53	2.84	3.16
0.3	0.58	0.72	0.87	1.16	1.45	1.74	2.03	2.17	2.32	2.60	2.89
0.2	0.52	0.65	0.78	1.03	1.29	1.55	1.81	1.94	2.07	2.33	2.59
0.1	0.44	0.55	0.66	0.88	1.09	1.31	1.53	1.64	1.75	1.97	2.19
Panel B: $\beta = 0.50$											
0.9	0.39	0.49	0.58	0.78	0.97	1.17	1.36	1.46	1.56	1.75	1.95
0.8	0.38	0.47	0.57	0.76	0.95	1.14	1.33	1.42	1.52	1.70	1.89
0.7	0.37	0.46	0.55	0.73	0.92	1.10	1.29	1.38	1.47	1.65	1.84
0.6	0.35	0.44	0.53	0.71	0.89	1.06	1.24	1.33	1.42	1.60	1.77
0.5	0.34	0.43	0.51	0.68	0.85	1.02	1.19	1.28	1.37	1.54	1.71
0.4	0.33	0.41	0.49	0.65	0.82	0.98	1.14	1.22	1.31	1.47	1.63
0.3	0.31	0.39	0.46	0.62	0.77	0.93	1.08	1.16	1.24	1.39	1.55
0.2	0.29	0.36	0.43	0.58	0.72	0.87	1.01	1.09	1.16	1.30	1.45
0.1	0.26	0.33	0.39	0.53	0.66	0.79	0.92	0.99	1.05	1.18	1.32

Avtorja omenjene ugotovitve upoštevata in razvijeta bolj uporabno metodo oziroma formulo za vrednotenje odškodnine za služnost (služečega zemljišča na gospodujoči parceli):

$$C = k \left[ 1 - \left( \frac{A_1}{A_0} \right)^\beta \right] x.$$

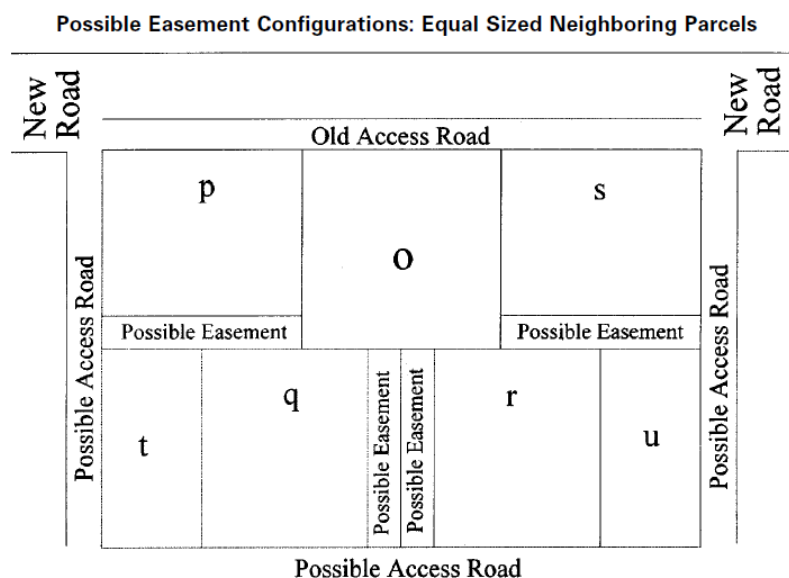
Če bi v našem primeru in naših parametrih ocenili obremenitev gospodujoče parcele s služnostjo v višini 25% ( $k = 0,25$ ) bi bila odškodnina za služnost 625,36 \$, v primeru 50% obremenitve pa 1250,70 \$. Ta tehnika oziroma metoda je drugačna od pravila palca fiksnih odstotkov, saj mora ocenjevalec oceniti in ovrednotiti vrednosti  $k$  in  $\beta$ , seveda pa tudi  $x$ , ki predstavlja tržno ceno celotnega gospodujočega zemljišča. V primeru da je  $\beta = 1$  (linearnost), ta formula postane pravilo palca fiksnih odstotkov. Pravilo palca je torej v tej novi formuli le specifičen primer znotraj spektra rešitev, ki zagotavljajo veliko boljšo podlago in koristno strukturo za vrednotenje in ocenjevanje nadomestil za uporabo zemljišča, služnostnih poti, izgube dela zemljišča in podobnih vrednostnih primerov. Je pa res, da ima lahko ocenjevalec veliko težav z realno oceno parametrov  $k$  in  $\beta$ , katerih vrednosti pa ključno vplivata na končno ocenjeno odškodnino.

Nahtigal (2014) v svoji neobjavljeni doktorski dispoziciji meni, da je formula dobra, a omogoča izboljšavo. Predvsem iz vidika bolj dodelanih slednje omenjenih parametrov  $k$  in  $\beta$  ter posredno preko tega segmentacijo formule na različne primere služnosti. »Kanalizacija pod zemljo« in »vsakodnevna vožnja sosedu čez parcelo« ne samo da drugače obremenita parcelo ampak bi morda lahko imela tudi različne ocenjevalne parametre, ki bi ključno vplivali na vrednost odškodnine za posamezno služnostno pravico nedoločenega obdobja.

Trefzger in Munneke (1998) razvijeta tudi tehniko vrednotenja odškodnine za služnost temelječo na preprostih načelih teorije pogajanja (delitev skupnega presežka) in teoriji iger (predvidevanje potez in razmišljanje drugih akterjev v postopku). Avtorja navajata, da metoda, ki izhaja iz preproste ekonomske analize in logičnega razmišljanja ni orodje, ki bi bilo uporabno v vseh primerih vrednotenja služnosti, a da lahko na drugi strani predstavlja cenilcu orodje oziroma idejo za razmišljanje.

Avtorja svoje razmišljanje o vrednotenju odškodnine za služnost razvijeta na primeru ki je prikazan na spodnji sliki. Obstoječa glavna cesta v mestu se razširi in lastnik parcele O zaradi tega ostane brez dostopa do parcele, ki ga je prej imel s severne strani. Po novem bi lahko oziroma bo moral lastnik parcele O dostopati do svoje parcele iz vzhodne ali zahodne stranske ceste, saj če dostopa do parcele nima je ta praktično razvrednotena. Avtorja se sprašujeta in odgovarjata na vprašanje koliko bi moral lastnik parcele O plačati odškodnine za služnost v primeru bilateralnega in multilateralnega pogajanja.

Slika 4: Možnost lokacije obremenjenosti parcele s služnostjo – enako velike parcele



a.) Bilateralni monopolni položaj lastnika služeče parcele

Najprej se obravnava primer, kjer od vseh sosedov lastnika parcele O le lastnik parcele S razpolaga s fizičnim stanjem parcele, ki bi lastniku parcele O omogočala možnost dostopa in dolgoročne služnostne poti. Ker je kot omenjeno zemljišče O brez dostopa skoraj razvrednoteno, lastnik parcele S drži monopolni položaj nad lastnikom parcele O. Avtorja hkrati predpostavljata, da ima tudi O nekaj pogajalske pozicije, saj S nima namena kupiti dodatnega zemljišča izven meja svoje parcele in bo moral tudi v primeru novega lastnika omogočiti služnostno pot. Prav tako S ne želi, da se parcela O razvrednoti in ostane pusta, saj je to slabo za izgled naselja in vrednosti sosednjih parcel. Glede na navedeno, avtorja predpostavita, da bosta lastnika parcel O in S presežek vrednosti delila pravično 50:50. Avtorja razvijeta sledečo formulo:

$$\frac{V_O - V_I}{2n} + V_L$$

kjer je:

- $V_O$  = rezervacijska cena kupca služnostne poti (najvišja cena ki jo je kupec pripravljen plačati v popolnoma prostovoljni transakciji; vrednost zemljišča – stroški ureditve poti);
- $V_I$  = negativna vrednost neprijetnosti, ki bi jo lastnik služnostne parcele imel, če bi služnostno pot potekala skozi njegovo lastnino;
- $V_L$  = izguba vrednosti zemljišča, ki bi jo lastnik služeče parcele dejansko utrpel ( $V_I = V_L$  če je lastnikova parcela izbrana za služnostno parcelo; drugače  $V_L = 0$ );
- $n$  = število posameznikov, ki lahko lastniku gospodujoče parcele ponudijo služnostno pot;

V tem primeru je vrednost gospodujočega zemljišča v urejenem stanju 23.000\$, stroški fizične ureditve poti so 2.000\$, rezervacijska cena kupca služnostne poti je torej 21.000\$ ( $V_O$ ). Minimalna

cena, ki jo prodajalec za služnost zahteva oziroma ocenjuje izgubo svoje vrednosti zemljišča je 1.000\$. Po tej teoriji bi bilo za lastnika O razumno da plača odškodnino za služnost (polovico ustvarjenega presežka  $10.000\$ + 1.000\$$  za zmanjšano vrednost zemljišča):

$$\frac{\$21,000 - \$1,000}{2 \cdot 1} + \$1,000 = \$11,000$$

Kot meni Nahtigal (2014), je model že v osnovi dokaj zgrešen, saj če lastnik S ocenjuje, da je izgubil vrednostno na parceli 1.000 \$, od lastnika O pa zahteva 11x več, gre v tem primeru za izsiljevanje, ker S ve, da je drugače parcela od O vredno nič.

V kolikor se predvideva, da lahko lastniki P, Q, R in S vsi ponudijo lastniku O služnostno pot, da so vsi popolnoma informirani (vsi vedo vse o vseh in vsi si želijo deliti ustvarjen presežek) ter da vsi z potencialno ustvarjeno služnostno potjo ustvarijo manjvrednost lastnega zemljišča v višini 1.000\$, bi se presežek razdelil po sledeči logiki:

- lastnik parcele R, ki bi dejansko zagotovila fizično pot bi prejel

$$\frac{\$21,000 - \$1,000}{2 \cdot 4} + \$1,000 = \$3,500$$

- lastniki parcel P, Q in S pa bi brez dela in obremenitve prejeli del svojega presežka:

$$\frac{\$21,000 - \$1,000}{2 \cdot 4} + 0 = \$2,500$$

Ker popolna informiranost ne obstaja in ker ni pravično, da je nekdo upravičen do skoraj enake nagrade oziroma dela ustvarjenega vrednostnega presežka kot nekdo drug, ki dejansko fizično in stvarno obremeni lastno nepremičnino, avtorja razmišljata dalje. Po tej logiki bi bilo seveda bolje, da O plača celotnih 11.000\$ lastniku R, tako kot prikazano v prvem primeru.

*Kaj bi se zgodilo v primeru dogovarjanja med sosedi?*

V kolikor bi kupec služnosti ocenil, da obstaja možnost dogovarjanja med sosedi o cenah, ki so jo pripravljene sprejeti oziroma o manjvrednosti njihove parcele v primeru služnostne poti, bi bilo potrebno k prejšnji formuli dodati še neko premijo  $\alpha$ , ki bi prevesila jeziček na tehtnici v primeru posameznega prodajalca. V tem primeru bi potem lastnik O plačal lastniku Q odškodnino v višini  $3.500\$ + \alpha$  in v kolikor bi se Q obnašal racionalno, bi to vrednost sprejel. V primeru enake pogajalske moči vseh sosedov bi Q prejel manj kot  $3.500\$ + \alpha$ .

$$\frac{V_O - V_I}{2n} + V_L + \alpha.$$

Je pa res, da ta primer v praksi ne obstaja saj kupec služnosti nima interesa vsem sosedom plačevati za služnost, poleg tega avtorja take vrste sodelovanja opisujeta kot nelegalno.

*Kaj bi se zgodilo v primeru nedogovarjanja med sosedi?*

Če je lastnik parcele O prepričan, da se sosedje med sabo ne dogovarjajo (bodisi zato ker se bojijo pravnih posledic nelegalnega početja bodisi zato ker se sploh ne zavedajo potencialnega presežka, ki bi ga lahko zaslužili), potem je vsak sosed lahko ponovno individualno obravnavan. Pridemo v situacijo enega kupca in več potencialnih prodajalcev, vsak z subjektivno oceno o tem koliko bo služnost razvrednotila njegovo parcelo in koliko je pripravljen sprejeti odškodnine. Lastnik O zato lahko igra teorijo igre in se gre pogajati k vsakemu sosedu, ki mu lahko omogoči pot dostopa. Formula za računanje služnosti v tem primeru je  $(V_I + \alpha)$  oziroma ocenjena manjvrednost parcele posameznega lastnika plus neka dodatna premija. Razlog za premijo je v filozofiji, da je majhen dobiček boljši kot nič dobička in vsak sosed, ki bi hotel biti preveč pohlepen bi se lahko kaj hitro zbal, da bo morda sosed zadovoljen pa z nižjo višino odškodnine.

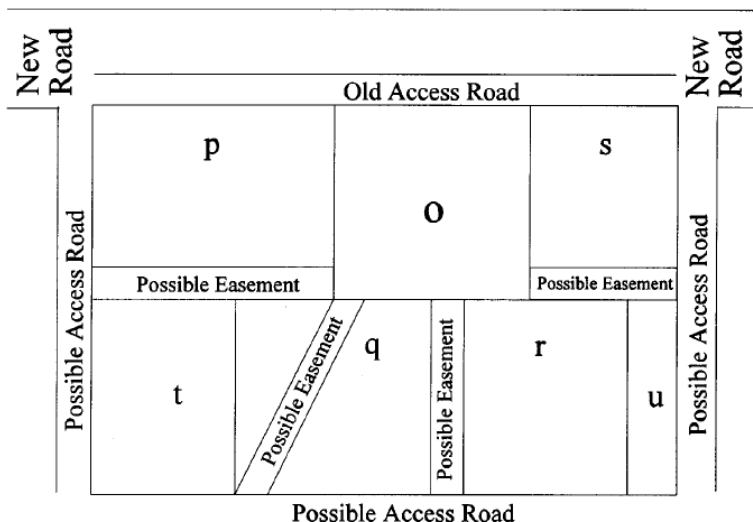
Slabost, ki se tukaj takoj pokaže je v dejstvu, da služnostna pot po navadi na vsaki parceli povzroči

različno manjvrednost oziroma razvrednotenje služeče parcele, kar pa ni odvisno samo od širine in dolžine poti ampak še od marsičesa drugega (začrtana pot, omejitev najboljše izrabe služečega zemljišča, ipd.). Slabost, ki spremlja to celotno teorijo je tudi v dejstvu, da nikjer ne razloži, kako bi se manjvrednost oziroma razvrednotenje služeče parcele lahko ocenilo. Gre namreč za ključen podatek.

Vzemimo še en primer. Sosedje se med seboj ne dogovarjajo, lastniki P, Q, R in S ocenjujejo manjvrednost svoje parcele zaradi potencialne služnostni poti na 1.000 \$, 1.200 \$, 1.400 \$ in 1.600 \$, kljub dejstvu da parcela P ponuja najdaljšo pot, parcela S pa najkrajšo služnostno pot – njihova subjektivna ocena (slika). Nadalje predpostavljamo, da bi bili stroški lastnika parcele O za fizično ureditev poti v višini 2.000 \$ za parcelo S, 2.500\$ za parcelo R, 3.000 \$ za Q in 3.500 \$ za čez parcelo P.

Slika 5: Možnost lokacije obremenjenosti parcele s služnostjo – različno velike parcel

Possible Easement Configurations: Different Sized Neighboring Parcels



Presežek ustvarjen s strani lastnika parcele O (njegova ustvarjena dodana vrednost s služnostno potjo), bi bila pri posameznih parcelah sledeča:

	Land Value with Access	Minus Cost to Perfect	Equals Potential Surplus	Minus Easement Purchase Price	Equals Net Surplus
For p:	\$23,000	– \$3,500	= \$19,500	– \$1,150	= \$18,350
For q:	\$23,000	– \$3,000	= \$20,000	– \$1,350	= \$18,650
For r:	\$23,000	– \$2,500	= \$20,500	– \$1,550	= \$18,950
For s:	\$23,000	– \$2,000	= \$21,000	– \$1,650	= \$19,350

V takem primeru bi lastnik parcele O izbral skozi parcelo S, kljub temu da lastnik parcele S najvišje vrednoti svojo potencialno manjvrednost parcele. Seveda izbira najkrajše služnostne poti ni splošna rešitev, rezultat posameznega specifičnega primera je odvisen od analize stroškov in koristi, kot je zgornja.

Nahtigal (2014) ocenjuje, da je metoda zanimiva kot način razmišljanja in morda uporabna v res specifičnih primerih izračunavanja odškodnine za služnost. Drugače pa ima metoda veliko pomanjkljivosti, največjo pa v tem da ne odgovarja na ključno vprašanje: koliko je manjvrednost služeče parcele zaradi služnostne poti?

Žlajpah (2009) obravnava služnost kot odškodnino zaradi motene uporabe nepremičnine kar obsega celotno obdobje od dneva nastanka do dneva prenehanja motenosti. Podobno izhodišče zasledimo v

Pravilniku o metodologiji za določanje nadomestil za služnosti na vodnih in priobalnih zemljiščih v lasti Republike Slovenije (Ur.l.RS, št. 35/2011), ki določa metodologijo za določanje višine nadomestila za pridobitev služnosti na vodnih ali priobalnih zemljiščih v lasti Republike Slovenije in upravljanju ministrstva, pristojnega za vode, ki ga mora plačati služnostni upravičenec služnostnemu zavezancu za izvajanje posega, ki je predmet služnosti. Osnova za določitev nadomestila je temeljna vrednost služečega zemljišča z upoštevanjem površine vplivnega območja posega, vrste služečega zemljišča, vpliva posega na vodni režim, vpliva posega na služeče zemljišče, emisije v vode in trajanje služnosti. Višina nadomestila  $N$  je izražena v evrih in se določi po naslednji enačbi:

$$N = P(m2) \times TV \text{ (EUR/ m2)} \times F(vrsta) \times F(režim) \times F(vpliv) \times F(emisija) \times F(čas)$$

pri čemer je:

$P$	– površina vplivnega območja posega, izražena v m2
$TV$	– temeljna tržna vrednost služečega zemljišča
$F(vrsta)$	– faktor vrste služečega zemljišča
$F(režim)$	– faktor vpliva posega na vodni režim
$F(vpliv)$	– faktor vpliva posega na služeče zemljišče
$F(emisija)$	– faktor emisije v vode
$F(čas)$	– faktor trajanja služnosti.

Žlajpah (2007) izhaja iz parametrov, ki so prikazani tabelarično s spodnji tabeli:

Odš = IzhVr * FObd * ( FObr * FDel * FTip )		
opis parametra	razpon vrednosti	
<b>IzhVr</b> ... izhodiščna vrednost	določeno na podlagi ocene tržne vrednosti	
	trajno:	Fobd = 1,00
	99 let:	Fobd = 1,00
	1-99 let*:	Fobd = 0,01 - 1,00
	*faktor ni linearno sorazmeren dolžini obdobja; upoštevati je potrebno tudi sedanjo vrednost bodočih donosov	
<b>FObr</b> ... vpliv stopnje obremenjenosti	minimalna:	FObr = 0,00 - 0,10
	srednja:	FObr = 0,10 - 0,40
	velika:	FObr = 0,40 - 0,90
<b>FDel</b> ... delež obremenjenega dela nepremičnine	FDel = 0,00 - 1,00	
<b>FTip</b> ... tip objekta	individualni stanovanjski:	FTip = 0,90 - 1,10
	več stanovanjski:	FTip = 0,70 - 1,00
	poslovni:	FTip = 0,60 - 1,00
	industrijski:	FTip = 0,30 - 0,70
	kmetijski:	FTip = 0,40 - 0,80
	pomožni:	FTip = 0,20 - 0,60

#### 4. Sklep

V sklepu potrjujemo že navedeno, da je pri vrednotenju nepremičnine obremenjenih s stvarno služnostjo najpomembnejše, kako bo služnost vplivala na samo nepremičnino in njeno nadaljnjo rabo, kje je služnost locirana (ob robu parcele, na zadnjem delu ali preko parcele, ipd.), koliko dolgo služnost traja in ali se služnost lahko potem odstrani in s kolikšnimi stroški je to povezano. Pomembno je, za kakšen poseg pri vzpostavitvi služnosti gre (trajanje gradbenih del), vprašanje ali lahko lastnik področje služnosti uporablja (prečka, delno pozida, ipd.) ali pa je to povezano z dovoljenji, pogodbenimi dogovori. Identifikacija in medsebojna povezanost glavnih pravic s služnostjo na nepremičnini je zato ključnega pomena za vrednotenje le teh.

Določitev vrednosti služnosti lahko torej razdelimo v tri faze:

1. Faza vzpostavljanja služnosti (gradnje)
2. Sama stvarna služnost začasa svojega trajanja
3. Obremenitev (običajno negativna), ki tekom vzpostavljene stvarne služnosti bremeni (npr. hrup, prah, osenčenje, ipd.) gospodujočo nepremičnino.

Fazo 1, fazo vzpostavljanja služnosti, lahko enačimo s stavbne pravice na parceli, torej možnostjo graditi na tuji parceli. Če torej gradnja npr. ceste po predmetni parceli traja 1 leto, vrednost odškodnine za čas, ko lastnik ta del parcele ne more uporabljati, lahko enačimo z vrednostjo stavbne pravice za dobo enega leta.

Fazo 2, vrednost stvarne služnosti, določimo po eni izmed prikazanih metod. Če torej povzamemo problem ocenjevanja stvarne služnosti, lahko v splošnem v praksi sledimo trem metodam za vrednotenje služnosti:

- Neposredno vrednotenje (Metoda primerljivih transakcij)
- Metoda vrednosti nepremičnine »PRED-in-PO vrednotenju« (Odškodnina kot vrednost razvrednotenja parcele, izguba dobička, itd.)
- Metoda fiksnih odstotkov (Odškodnina kot odstotek vrednosti služečega zemljišča brez vpisane služnostne pravice).

Fazo 3, obremenitev pa lahko vrednotimo po modelu Žlajpah (2007), ki upošteva stopnjo, trajanje, intenziteto in vplivno območje obremenjenosti.

Pregled pristopov in metod kaže določeno kompatibilnost in prepletenost, zagotovo pa, kot navaja že Stopar in Šubic Kovač (2016), raziskava razbija mit o metodi na palec in vsesplošnem 30% zmanjšanju vrednosti zemljišča zaradi stvarne služnosti v Republiki Sloveniji.

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## **Adjustment of the working environment in the context of invalidity insurance rights**

Ines Kosovel

Student at Nova University, European faculty of Law, Slovenia

E-mail: ines.kosovel@gmail.com

### **Abstract**

Slovenia is a legal and welfare state that ensures to all its citizens, in accordance with the Constitution, equality and consistent respect for all human rights. From the point of view of protecting the rights of people with disabilities, ensuring their economic independence and their involvement and contributing to society in all its fields, the proper employment of disabled people is also of great importance. The Institute for Pension and Disability Insurance plays an important role in maintaining employment and finding opportunities for new employment of disabled workers in the context of invalidity insurance rights. The article presents the Institute for Vocational Rehabilitation of the Workers' Disabled Person and the importance of adjusting the working environment in preserving and ensuring adequate employment for the disabled worker. The content of the article is summarized on the basis of research work, in the framework of the master's thesis entitled "Adapting the working environment in the framework of invalidity insurance rights." In conclusion we summarize the key findings of the research and make recommendations for the further development of the field.

**Keywords:** equality of people with disabilities, disability insurance, work invalids, preservation of employment, right to vocational rehabilitation, adaptation of the working environment.

## 1. UVOD

Ustava Republike Slovenije (Ustava RS, 2. člen) določa, da je Slovenija pravna in socialna država in kot ena izmed držav Evropske unije sledi njenim ciljem, ki med drugim obsegajo tudi področje varstva pravic invalidov. Invalidi v Republiki Sloveniji imajo skladno s 14. členom ustave enake pravice in obveznosti kot njeni ostali državljani<sup>1</sup>. Država mora poskrbeti za njihovo izvajanje. Pri tem mora invalidom zagotoviti enakopravnost in dosledno spoštovanje vseh človekovih pravic. Ob upoštevanju njihove izjemnosti in posebnih potreb jim mora omogočiti uspešno vključevanje v vse sfere javnega in zasebnega življenja. Za vključitev invalidov v družbo sta nedvomno pomembna delo in zaposlitev, ki invalidu omogočata ekonomsko neodvisnost in primerno socialno vključenost. To je tudi eden izmed ciljev Akcijskega programa za invalide 2014-2021, sprejetega s strani Vlade Republike Slovenije (Akcijski program za invalide 2014-2021, str. 15).

Z ustreznimi ukrepi je potrebno zagotoviti večjo zaposljivost invalidov in njihovo zainteresiranost za delo, delodajalce pa seznaniti z vsemi možnostmi zagotovitve delovnega mesta delovnemu invalidu. Država lahko z raznimi spodbudami, tudi v obliki subvencij, pospeši zaposlovanje invalidov oz. zagotovi ohranitev delovnega mesta z raznimi oblikami prilagoditve (Akcijski program za invalide 2014-2021, str. 15–17). Področje temeljnih pravic invalidov je dokaj širok pojem, kar je razvidno tudi iz množice pravnih predpisov, ki to področje urejajo. Prispevek obravnava izključno pravice delovnih invalidov, ki so urejene v veljavnem Zakonu o pokojninskem in invalidskem zavarovanju (v nadaljevanju ZPIZ-2). Namen prispevka je predstaviti pomen poklicne rehabilitacije delovnega invalida, v okviru pravic iz pokojninskega in invalidskega zavarovanja, s poudarkom na prilagoditvi delovnega okolja. Zanima nas kakšen vpliv ima prilagoditev delovnega okolja pri ohranjanju zaposlitve delovnega invalida in iskanju ustrezne zaposlitve, kot tudi analiza dejanskega stanja, ki bo nakazala smernice za nadaljnji razvoj tega področja. Prispevek temelji na ugotovitvah raziskovalnega dela, ki smo jih podrobno predstavili v magistrski nalogi z naslovom »Prilagoditev delovnega okolja v okviru pravic iz invalidskega zavarovanja.«

Razlogi za izbiro navedene teme magistrske naloge so predvsem v tem, da s področja predstavitve postopka poklicne rehabilitacije, s poudarkom na prilagoditvi delovnega okolja, še ni opravljenih veliko raziskav, ki bi osvetlile dejansko stanje na tem področju. Institut poklicne rehabilitacije se v praksi še le dobro uveljavlja in ni še prevzel temeljne naloge invalidskega zavarovanja, ki bi pripomogla k ohranjanju in večjemu zaposlovanju delovnih invalidov.

Iz tega vidika smo si za glavno tezo raziskovalnega dela izbrali naslednjo definicijo:

*»Slovenija kot socialna in pravna država zagotavlja enake pravice in obveznosti vsem svojim državljanom. Delo in zaposlitev sta najpomembnejša dejavnika, ki invalidu omogočata ekonomsko neodvisnost in primerno socialno vključenost v sfero javnega in zasebnega življenja. S tega vidika je prilagoditev delovnega okolja izredno pomembna pri ohranjanju zaposlitve delovnega invalida in zaposlovanju invalidov na ustreznem delovnem mestu.«*

V okviru raziskovalnega dela smo poskušali odgovoriti na naslednja vprašanja:

1. Kakšen vpliv ima invalidska zakonodaja, postopek poklicne rehabilitacije in prilagoditev delovnega okolja pri ohranjanju zaposlitve delovnega invalida in njegovi zaposlitvi?
2. V kolikšni meri so delodajalci seznanjeni z institutom poklicne rehabilitacije in prilagoditvijo delovnega okolja v okviru pravic iz invalidskega zavarovanja?
3. Kakšno je dejansko stanje na tem področju?
4. Kateri so poglavitni vzroki za njeno nezadostno uporabo?
5. Kakšni ukrepi bi bili potrebni za odpravo teh pomanjkljivosti?

V prvem delu magistrske naloge so predstavljeni pomembnejši pravni akti s področja invalidske zakonodaje, s poudarkom na pravicah delovnih invalidov zajetih v veljavnem Zakonu o pokojninskem in invalidskem zavarovanju. Empirični del naloge analizira dejansko stanje izvajanja instituta poklicne rehabilitacije in prilagoditve delovnega okolja kot tudi ukrepe za povečanje učinkovitosti tega instituta.

Cilji, ki smo jih dosegli v raziskovalnem delu naloge:

- Opisali smo temeljne pojme in predstavili pravne temelje invalidskega zavarovanja s poudarkom na Zakonu o pokojninskem in invalidskem zavarovanju.
- Predstavili smo postopek poklicne rehabilitacije, njen pomen in vlogo pri ohranjanju zaposlitve delovnega invalida s poudarkom na prilagoditvi delovnega okolja.
- S poglobljenim vpogledom v primere dobre prakse smo ugotovili bistvene dejavnike, ki vplivajo na ohranitev zaposlitve delovnega invalida oz. zaposlitev na ustreznem delovnem mestu.
- S polstrukturiranimi intervjuji smo pridobili mnenja, poglede strokovnih udeležencev v postopku poklicne rehabilitacije in njihova stališča do nadaljnjega razvoja navedenega področja.
- Na podlagi pridobljenih rezultatov v teoretičnem in empiričnem delu naloge smo povzeli bistvene elemente, ki so pomembni za nadgradnjo invalidskega zavarovanja v okviru Zakona o pokojninskem in invalidskem zavarovanju.

## 2. METODE RAZISKOVANJA

Teoretični del naloge temelji na opisni ali deskriptivni metodi, s predstavitvijo temeljnih pojmov in pomembnejših pravnih predpisov s področja invalidske zakonodaje. V empiričnem delu naloge smo s poglobljenim vpogledom in z uporabo razlagalne – eksplanatorne študije primera, podrobno opisali nekaj namensko izbranih primerov uspešno zaključene poklicne rehabilitacije in prilagoditve delovnega mesta.

Z vprašanji, zastavljenimi v polstrukturiranem intervjuju, smo pridobili stališča posameznih strokovnih udeležencev, njihova občutenja in vrednotenja v postopku ter njihova mnenja glede nadaljnjega razvoja navedenega področja. Pogovore smo posneli in nato prepisali, kar je omogočilo lažjo analizo in interpretacijo odgovorov. Intervjuji so se izvedli v obdobju januar- marec 2017.

Pri izboru navedenih petih udeležencev smo upoštevali kriterij, da so vsi udeleženci neposredno seznanjeni s problematiko zaposlovanja in ohranjanja zaposlitve delovnega invalida, saj so to strokovne osebe, ki vsaka zase s svojega področja, neposredno in vsakodnevno sodelujejo v procesu prilagoditve delovnega okolja in iskanju ustreznega delovnega mesta delovnemu invalidu.

Kot prvo udeleženko, s katero smo opravili intervju, smo izbrali predsednico Invalidske komisije v Novi Gorici, druga udeleženka je predstavnica kadrovske službe večjega podjetja, tretji udeleženec je strokovni delavec v pripravljalnem postopku, četrti udeleženec je vodja Oddelka za invalidsko zavarovanje in poklicno rehabilitacijo Območne enote Celje<sup>1</sup>; kot peto udeleženko v pogovoru smo izbrali predstavnico zunanje strokovne institucije Invalidskega podjetja Posočje.

Na podlagi tako zbranih odgovorov smo v zaključku naloge tudi s pomočjo induktivne metode povzeli ugotovitve, pomembne za nadaljnji razvoj obravnavanega področja.

## 3. PRAVNI TEMELJI INVALIDSKEGA ZAVAROVANJA

Pravice invalidov so zajete v mnogih predpisih, v nalogi je opisanih le nekaj izmed njih.

Kot prvo smo omenili Konvencijo o pravicah invalidov, ki je pravno zavezujoč akt Združenih narodov s področja invalidskega varstva z namenom zagotavljanja enakih možnosti in enake obravnave invalidov ter preprečevanja njihove diskriminacije.

Sprejeta je bila s strani Generalne skupščine Organizacije združenih narodov dne 13. 12. 2006 na sedežu Združenih narodov v New Yorku. V marcu 2007 je konvencijo podpisalo 82 držav, med njimi tudi Slovenija. Slovenija je bila tudi ena izmed prvih držav, ki so podpisale ratifikacijo konvencije aprila 2008. Do danes je konvencijo podpisalo že 160 držav (Convention on the Rights of Persons with Disabilities, e-vir).

Skladno s konvencijo so vsi ljudje enaki pred zakonom in so upravičeni do enakega pravnega varstva brez diskriminacije. Vsaka diskriminacija zaradi invalidnosti je prepovedana in države pogodbenice v

ta namen sprejmejo vse potrebne ukrepe. Ukrepi, ki so potrebni za doseganje enakosti invalidov, se v tem primeru ne štejejo za diskriminacijo (Konvencija o pravicah invalidov, 2008, 5. člen).

Države pogodbenice skladno s 27. členom konvencije invalidom priznavajo pravico do dela enako kot drugim, z možnostjo svobodne izbire dela na trgu dela in v takem delovnem okolju, ki je prilagojeno in dostopno invalidom.

Glavni in najpomembnejši cilj Evropske strategije o invalidnosti za obdobje 2010- 2020 je okrepitev vloge invalidov na prostem trgu dela. Ukrepi strategije obsegajo osem glavnih področij: dostopnost, sodelovanje, enakost, zaposlovanje, izobraževanje in usposabljanje, socialna zaščita, zdravje in zunanji ukrepi (European Disability Strategy 2010-2020, str. 4, e-vir).

Ustava Republike Slovenije je najpomembnejši in najvišji pravni akt države Slovenije. Z ustavnimi normami so urejeni temeljni in družbeni odnosi v državi in tudi razmerja med državljani in državo. Vsi ostali zakoni in predpisi morajo biti v skladu z Ustavo (Kaučič in Grad, 2008, str. 25-27).

Pravico do socialne varnosti državljanov določa 50. člen Ustave RS, ki pravi, da država ureja in skrbi za delovanje obveznega zdravstvenega, pokojninskega, invalidskega in drugega socialnega zavarovanja. Posebno varstvo, skladno z zakonom, je zagotovljeno tudi vojnim veteranom in žrtvam vojnega nasilja.

Nadalje smo predstavili naloge Akcijskega programa za invalide 2014-2021, ki določa 13 ciljev, pomembnih za uresničitev ukrepov, ki bodo invalidom omogočila doseganje in ohranjanje največje možne samostojnosti, telesne, duševne, socialne in poklicne zmožnosti in tudi njihovo polno vključenost v družbo ter sodelovanje na vseh področjih življenja.

Zmanjšana in omejena delovna zmožnost otežuje življenje invalida in ga postavlja v slabši položaj od drugih. Zato je potrebno skladno s ciljem »delo in zaposlovanje« zagotoviti ukrepe, ki bodo invalidom omogočale večjo zaposljivost, delodajalce pa seznaniti z možnostjo prilagoditve delovnega okolja in delovnega mesta. Pomembna je tudi spodbuda invalidu za aktivno iskanje zaposlitve (Akcijski program za invalide 2014 -2021, str. 11-22).

Kodeks o ravnanju z invalidnostjo na delovnem mestu je bil izdan leta 2002 s strani Mednarodne organizacije dela (ILO) in v izvirniku nosi naslov »Code of practice on managing disability in the workplace«.

Na kratko smo predstavili tudi Zakon o izenačevanju možnosti invalidov (ZIMI) in Zakon o varnosti in zdravju pri delu (ZVZD-1).

Podrobnejše smo obdelali veljavni Zakon o pokojninskem in invalidskem zavarovanju in predstavili Zavod za pokojninsko in invalidsko zavarovanje Slovenije.

Zavod zavarovancem nudi ustrezne kakovostne, hitre in učinkovite informacije glede pravic iz naslova pokojninskega, invalidskega in mednarodnega zavarovanja, kot tudi ustrezno pravno pomoč iz navedenega področja (Predstavitev Zavoda in poslovnik kakovosti, 2012, str. 2).

ZPIZ-2 v VII. poglavju »Pravice iz invalidskega zavarovanja« opredeljuje pojem invalidnosti, preostale delovne zmožnosti, vzroke za nastanek invalidnosti in razvrstitev v tri kategorije invalidnosti.

V VIII. poglavju »Pridobitev in odmera pravic iz invalidskega zavarovanja« pa zakon opredeli pomen poklicne rehabilitacije, njen namen, pogoje za pridobitev pravice, načine poklicne rehabilitacije, načine izvajanja poklicne rehabilitacije, odmero nadomestila in tudi pravico do premestitve po zaključeni poklicni rehabilitaciji (ZPIZ -2).

Priznanje pravic iz naslova obveznega invalidskega zavarovanja se ugotavlja na podlagi podanega izvedenskega mnenja, ki ga izdajo pristojni izvedenski organi Zavoda. Izvedenski organi zavoda so organizirani v obliki Invalidskih komisij na I. in II. stopnji in so izključno pristojni za izdajo izvedenskih mnenj v postopkih uveljavljanja pravic iz naslova obveznega pokojninskega in invalidskega zavarovanja. Na podlagi podanih izvedenskih mnenj Invalidske komisije strokovni delavci Zavoda izdajo ustrezne odločbe o pravicah iz naslova invalidskega zavarovanja. Pri tem morajo dosledno upoštevati podano izvedensko mnenje Invalidske komisije (Papež, M. et al, 2014, str. 394).

Organizacijo in način delovanja izvedenskih organov Zavoda določa Pravilnik o organizaciji in načinu delovanja izvedenskih organov Zavoda za pokojninsko in invalidsko zavarovanje Slovenije.

Zavarovanec pridobi pravice iz invalidskega zavarovanja, na podlagi ugotovljene stopnje invalidnosti, če izpolnjuje pogoje 69. člena ZPIZ-2. Stopnja invalidnosti se določi na podlagi preostale

delazmožnosti zavarovanca po zaključenem zdravljenju, govorimo lahko o preostali delazmožnosti ali eventuelno o izgubi delovne zmožnosti (Papež, M. et al, 2014, str. 181).

Namen poklicne rehabilitacije je zavarovanca strokovno, fizično in psihosocialno usposobiti za drug poklic ali delo tako, da se lahko ponovno zaposli in vključi v delovno okolje oziroma se usposobi za opravljanje istega poklica ali dela s prilagoditvijo delovnega mesta z ustreznimi tehničnimi pripomočki (ZPIZ-2, 70. člen).

Zavarovanec, ki je na podlagi pravnomočne odločbe pridobil pravico do poklicne rehabilitacije, se je dolžan usposabljaati za ustrezno delo skladno s zakonom in s pogoji določenimi v pogodbi o poklicni rehabilitaciji.

Če je za poklicno rehabilitacijo zavarovanca potrebna prilagoditev prostorov in delovnih sredstev, Zavod delno ali v celoti prevzame stroške prilagoditve. Zavod v celoti ali delno krije tudi stroške prilagoditve, če je to potrebno za ohranitev zaposlitve zavarovanca. Del sredstev za invalidsko zavarovanje lahko Zavod nameni za ohranitev zaposlitve in pospeševanja zaposlovanja delovnih invalidov (73. člen ZPIZ-2).

Prilagoditev delovnega mesta invalidom je pomembna tudi z vidika načela enakega obravnavanja invalidov in prepovedi diskriminacije. Delodajalci morajo sprejeti ustrezne – to je učinkovite in praktične – ukrepe za prilagoditev delovnih mest invalidom, denimo s prilagoditvijo delovnih prostorov in opreme, ritma delovnega časa, razdelitve delovnih nalog ali z zagotovitvijo sredstev za usposabljanja ali uvajanje v delo (Council Directive 2000/78/EC, 2000).

Enako obravnavanje invalidov in prepoved diskriminacije oseb s posebnimi potrebami najdemo tudi v ameriški zakonodaji. Že leta 1990 je bil s tem namenom sprejet predpis »Americans with Disabilities Act«, ki podrobno obravnava pravice invalidov in prepoveduje diskriminacijo invalidov pri zaposlovanju. Predpis med drugim definira prilagoditev delovnega mesta in podaja pomembne smernice za razvoj navedenega področja in tudi pomembne napotke delodajalcem in invalidom (Americans with Disabilities Act, 1990).

Opis samega postopka poklicne rehabilitacije je opredeljen v Organizacijskem navodilu-b, pripravljalni postopek in poklicna rehabilitacija, ki je bil sprejet s strani Zavoda za pokojninsko in invalidsko zavarovanje Slovenije, z veljavnostjo od 27. 2. 2016 dalje.

Zavod je z namenom, da bi strokovnim institucijam olajšal delo pri obravnavi kandidatov za poklicno rehabilitacijo in zagotovil sestavo poročil o poklicni rehabilitaciji, ki bi omogočala nemoteno izvedbo nadaljnjega postopka poklicne rehabilitacije, v letu 2017 izdal »Priporočila strokovnim institucijam (izvajalcem zaposlitvene rehabilitacije) za poročilo o PR«. Poklicna rehabilitacija ni sama sebi namen, ampak je to postopek iskanja rešitve za ohranitev ali zagotovitev ustreznega delovnega mesta zavarovancu glede na njegovo preostalo delazmožnost po nastanku invalidnosti. To ni spisek želja zavarovanca ali njegovega delodajalca, ampak realna ocena možnosti ohranitve ali zagotovitve ustreznega delovnega mesta zavarovanca. Poklicna rehabilitacija mora biti enostavna, hitra in realna glede na izvedbo; prilagojena delovnim zmožnostim zavarovanca, da se ohrani njegova zaposlitev; prilagojena tudi potrebam delodajalca in trga dela ter skladna z zakonodajo.

Na podlagi izvedenskega mnenja Invalidske komisije se izda ustrezna odločba o razvrstitvi zavarovanca v II. kategorijo invalidnosti s pravico do poklicne rehabilitacije.

Po dokončnosti odločbe o priznani pravici do poklicne rehabilitacije se pripravi pogodba o poklicni rehabilitaciji (ZPIZ-2, 77. člen), v kateri se določi oblika, način, roki in trajanje poklicne rehabilitacije in program izobraževanja. V pogodbi so navedene tudi dolžnosti in obveznosti, ki zavezujejo pogodbene stranke. Podpisniki pogodbe (pogodbene stranke) so v primeru zaposlenih zavarovancev Zavod, zavarovanec in delodajalec; pri nezaposlenih zavarovancih pa namesto delodajalca njegovo vlogo prevzame Zavod za zaposlovanje.

#### 4. REZULTATI RAZISKAVE

V prvem delu raziskave smo namensko izbrali štiri primere prilagoditve delovnega mesta, ki nazorno prikažejo pomen sodelovanja in pripravljenosti vseh udeležencev v postopku iskanja rešitev za ustrezno zaposlitev delovnega invalida. V vseh primerih smo zagotovili anonimnost zavarovancev in delodajalcev. S prikazom primerov dobrih praks smo želeli pridobiti poglobljen in natančen vpogled v



preučevano tematiko. Poleg motivacije samega zavarovanca je nedvomno pomembna tudi vloga ostalih udeležencev v postopku, v prvi vrsti vsekakor delodajalca.

Kako pomembna je vloga delodajalca, je najbolj razvidno v tretjem primeru dobre prakse, kjer je bilo sodelovanje delodajalca izredno pozitivno. Sicer je res, da je bil delovni invalid nekaj časa po dokončnosti odločbe o razvrstitvi v III. kategorijo invalidnosti doma na čakanju, a se je delodajalec ves čas trudil in iskal ustrezno delo zanj. V sodelovanju z izvedencem medicine dela, prometa in športa je tudi našel ustrezno delo in uredil vse potrebno, da je delovnemu invalidu omogočil nadaljnjo zaposlitev (arhitektonske prilagoditve delovnega okolja). Zavod je v tem primeru zagotovil sofinanciranje sredstev prilagoditve.

Vsi štirje navedeni primeri so odličen prikaz uspešnega sodelovanja vseh strokovnih udeležencev v postopku prilagoditve delovnega okolja delovnega invalida, seveda ob hkratni najpomembnejši vlogi samega zavarovanca – delovnega invalida.

V drugem delu raziskave smo skozi poglede, mnenja in stališča petih strokovnih udeležencev v procesu prilagoditve delovnega okolja, ki smo jih pridobili s pomočjo polstrukturiranih intervjujev, poskušali dobiti odgovore na zastavljena vprašanja, ki so nam bila v pomoč pri analizi navedenega področja. Iz odgovorov smo izluščili povzetke, ki smo jih med seboj primerjali in analizirali in rezultat kvalitativne raziskave predstavili v ugotovitvah na koncu magistrske naloge. Rezultati raziskave so obdelani in analizirani na besedni način brez uporabe merskih enot in postopkov.

#### **4.1. VLOGA INVALIDSKE ZAKONODAJE**

Invalidska zakonodaja ima velik pomen pri zagotavljanju in ohranjanju ustrezne zaposlitve delovnemu invalidu. Vloga Zavoda za pokojninsko in invalidsko zavarovanje je, pri razreševanju problematike delovnih invalidov, zelo pomembna; ne samo iz vidika zagotavljanja pravnih temeljev, samega poteka postopka in zagotavljanja ustreznih finančnih sredstev tako delovnim invalidom kot delodajalcem, ampak tudi iz vidika tesnega sodelovanja strokovnega delavca, ki vodi pripravljalni postopek, predsednikom senata Invalidske komisije s predstavniki delovne organizacije in predstavniki zunanje institucije. V primeru brezposelnih zavarovancev pa je pomembno tudi sodelovanje s pristojnim Zavodom za zaposlovanje, ki poda podroben vpogled v dejansko stanje na trgu dela.

#### **4.2. DEJANSKO STANJE NA TEM PODROČJU**

Na podlagi izsledkov raziskave smo prišli do ugotovitve, da so delodajalci premalo seznanjeni z institutom poklicne rehabilitacije in so do njega velikokrat odklonilni. Odklonilno mnenje delodajalca vpliva na to, da se delavci ne odločijo za postopek poklicne rehabilitacije, ker se bojijo izgubiti službo. Delodajalci ne vidijo prednosti tega postopka, vse preučujejo s finančne strani (Kakšne stroške bodo imeli s prilagoditvijo, z delovnim invalidom? Koliko bo odsotnosti delovnega invalida zaradi bolezni?,,,), oviro predstavlja tudi neustrezna sistematizacija delovnih mest. Večje težave imajo vsekakor manjši delodajalci, ki so omejeni tako s finančne strani kot tudi iz vidika sistematizacije delovnih mest. Delodajalci menijo, da so finančne spodbude premajhne glede na stroške, ki jih imajo z delovnimi invalidi, poleg tega v družbi še vedno obstajajo predsodki napram invalidom, kar se odraža tudi v delovnih organizacijah.

Vloga zavarovanca je v samem postopku poklicne rehabilitacije in prilagoditve delovnega okolja najpomembnejša. Uspešno izpeljan postopek poklicne rehabilitacije je odvisen od motiviranosti delovnega invalida, njegove razgledanosti, izobrazbe kot tudi zdravstvenega in psihološkega stanja. Odločitev delovnega invalida je odvisna tudi od višine denarnega nadomestila, ki ga bo v času poklicne rehabilitacije prejemal in od sodelovanja delodajalca. Na njihovo odločitev vpliva negotovost glede nadaljnje zaposlitve in strah pred neuspehom, zato je v teh trenutkih pomembna spodbuda in podpora zunanje institucije, delodajalca in pristojnega strokovnega delavca s strani Zavoda.

V praksi se je izkazalo, da je postopek poklicne rehabilitacije uspešen, kadar je zavarovanec motiviran za sam postopek, ima jasne cilje in realne želje. Vloga zunanje institucije je pomembna z vidika kvalitetno izpeljanega postopka in priprave ustreznega poročila. Najoptimalnejše so krajše oblike poklicne rehabilitacije, ki omogočajo hitrejšo vrnitev delovnega invalida v delovni proces, kot so to

prilagoditve delovnega mesta z ustreznimi tehničnimi pripomočki, razni krajši tečaji in usposabljanja na delovnem mestu, itd.

Vsega tega pa ni mogoče zagotoviti, če ni aktivnega sodelovanja vseh udeležencev v samem postopku poklicne rehabilitacije.

Neuspeh je posledica nezainteresiranosti delodajalcev in zavarovancev, neosveščenosti delodajalcev, neosveščenosti izvajalcev medicine dela, prometa in športa, precenitve zmožnosti zavarovanca predvsem pri izbiri daljših oblik poklicne rehabilitacije (npr. prezahteven študijski program, nerealni cilji,...), neustreznih poročil strokovne institucije in nepravilne ocenitve dejanskega stanja.

## **5. PRIPOROČILA ZA NADALJNI RAZVOJ PODROČJA**

Namen zakonodajalca je, da poklicna rehabilitacija postane temeljna pravica iz invalidskega zavarovanja, ki bi lahko vsem zavarovancem, pri katerih ni prišlo do popolne izgube delovne zmožnosti, omogočila ohranitev zaposlitve oziroma zagotovila ustrezno zaposlitev, v okviru njihovih preostalih delovnih zmožnosti.

Priporočila, ki jih navajamo v nadaljevanju predstavljajo povzetek ugotovitev povzetih iz primerov dobre prakse in odgovorov strokovnih udeležencev, kot tudi iz neposrednega dela na navedenem področju.

### **5.1. POMEN OSVEŠČANJA**

Če želimo, da poklicna rehabilitacija postane temeljna pravica iz invalidskega zavarovanja, moramo širšo javnost seznani z njeno vsebino. Osveščanje po našem mnenju velja za eno od najpomembnejših priporočil za nadaljnje delo na tem področju.

Zato predlagamo uvedbo obveznega predmeta »Medicina dela in pravice iz invalidskega zavarovanja« na Medicinski fakulteti, v okviru katerega bi študenti spoznali tudi pomen poklicne rehabilitacije in njeno vlogo pri ohranitvi in prilagoditvi delovnega mesta invalidom. Ustrezno izobraževanje bi bilo smiselno uvesti tudi na drugih fakultetah (Fakulteti za arhitekturo, Fakulteti za gradbeništvo, Fakulteti za socialno delo...). Upoštevanje podaljševanje življenjske starosti in starostne meje za pridobitev pravice do pokojnine bo institut prilagoditve delovnega okolja pridobil velik pomen tudi s tega vidika. Znanje izvedencev medicine dela, prometa in športa ter ostalih zdravnikov splošne in družinske prakse lahko nadgradimo z organizacijo obveznih seminarjev s tega področja. Prav tako je potrebno pomen poklicne rehabilitacije predstaviti vsem delodajalcem in izvajalcem samostojne dejavnosti in tudi širši javnosti z organizacijo seminarjev in z objavo člankov v strokovnih revijah in na spletnih straneh strokovnih institucij, itd.

### **5.2. USTANOVITEV INVALIDSKIH PODJETIJ**

Država mora zagotoviti ustanovitev več invalidskih podjetij z različnimi vrstami dejavnosti, ki bodo zagotavljala ustrezna delovna mesta za brezposelne invalide in delovne invalide, katerih delovnega mesta v njihovi delovni organizaciji ne bo mogoče prilagoditi. Invalidska podjetja lahko invalidom nudijo dodatne izkušnje in nadgradnjo znanja v okviru usposabljanja, ki jih bodo invalidi kasneje s pridom uporabili v svoji matični delovni organizaciji.

### **5.3. POGLOBLJENO SODELOVANJE**

Zagotoviti je potrebno aktivno udeležbo vseh udeležencev v postopku poklicne rehabilitacije, v prvi vrsti zavarovanca, njegovega delodajalca, izvedenca medicine dela, prometa in športa, strokovne institucije, itd. Kot je razvidno iz prakse, je uspeh odvisen od pripravljenosti in angažiranosti vseh v postopku: zavarovanca, delodajalca, zdravnika medicine dela, prometa in športa, psihologa, inženirja varnosti pri delu, socialnega delavca... S tega vidika predlagamo, da se na skupnem sestanku, po odločitvi zavarovanca za poklicno rehabilitacijo, delodajalca seznani z zavarovančevo odločitvijo še pred nadaljevanjem postopka v zunanji instituciji. Tako bo delodajalcu dana možnost aktivnejšega

sodelovanja in bo imel več časa za iskanje ustreznega delovnega mesta; hkrati bo pridobil ustrezne informacije o samem postopku.

Pri odločanju o pravici do poklicne rehabilitacije brezposelnih delovnih invalidov je potrebno okrepiti vlogo Zavoda RS za zaposlovanje z vidika svetovanja glede na trenutne razmere na trgu dela.

#### 5.4. REŠITVE S Poudarkom na krajših oblikah

Krajše oblike poklicne rehabilitacije, ki omogočajo hitro vrnitev zavarovancev v delovni proces, so vsekakor bolj optimalne za delovnega invalida. Daljša kot je odsotnost z delovnega mesta, težja je vrnitev, zato je potrebno zagotoviti čim hitrejšo vrnitev delovnega invalida nazaj v delovno okolje. Delovni invalidi se ob nastanku invalidnosti soočajo z različnimi dilemami in strahovi, zato je potrebno zagotoviti krajše oblike poklicne rehabilitacije, ki so se v praksi izkazale za uspešne (prilagoditve delovnega mesta z različnimi tehničnimi pripomočki, usposabljanja na ustreznem delovnem mestu, razni krajši tečaji...).

Po vzoru iz tujine bi bilo potrebno razmisliti tudi o možnosti ustanovitve dodatnih rehabilitacijskih centrov ali institucij (2 do 3 centri v Sloveniji – odvisno od potreb), ki bi omogočili takojšnjo medicinsko rehabilitacijo delovnega invalida. V praksi sedaj zavarovanci dolgo čakajo na določene specialiste (ortopede, nevrologe...), kar podaljša čas zdravljenja in rehabilitacije. V tujini imajo za take primere več rehabilitacijskih centrov, v katerih so invalidom zagotovljene takojšnje zdravstvene storitve in niso vezani na dolge čakalne vrste pri različnih specialistih kot pri nas. Če bi se v postopku odločanja o pravicah iz invalidskega zavarovanja ugotovilo, da je za odločitev o pravici potrebno še dodatno mnenje določenega specialista, bi se delovnega invalida napotilo v institucijo, ki bi zagotovila takojšnjo podajo mnenja. S tem bi se skrajšali tudi invalidski postopki. Strokovni rehabilitacijski tim bi lahko tudi podal usmeritve za nadaljnjo poklicno pot delovnega invalida, saj bi v teku rehabilitacije dobro spoznali njegove želje in zmožnosti.

#### 5.5. SPREMEMBE INVALIDSKEGA ZAVAROVANJA

Ob uveljavitvi ZPIZ-2 je bila želja zakonodajalca, da poklicna rehabilitacija postane temeljna pravica iz invalidskega zavarovanja, kar pa se v praksi ni uresničilo. Zato bi bilo ob upoštevanju predlogov v Beli knjigi o pokojninah potrebno na novo določiti razvrstitev v kategorije invalidnosti.

Invalidnost bi bila tako razvrščena le v dve kategoriji, in sicer:

- I. kategorija invalidnosti, če bi pri zavarovancu prišlo do popolne izgube delovne zmožnosti, ker ne bi bil več sposoben opravljati nobenega organiziranega pridobitnega dela niti s krajšim delovnim časom štiri ure dnevno ali
- II. kategorija, če bi zavarovanec lahko opravljal določena dela, ustrezna njegovi preostali delovni zmožnosti najmanj štiri ure dnevno, upošteva njegovo strokovno izobrazbo in pridobljene izkušnje.

Z novo določitvijo kategorij invalidnosti bi tako invalidska upokožitev postala skrajni ukrep invalidskega zavarovanja. V okviru II. kategorije invalidnosti bi bila zavarovancem zagotovljena pravica do poklicne rehabilitacije in prilagoditve delovnega okolja.

Pri odločanju o pravicah iz invalidskega zavarovanja bo potrebno v prihodnje upoštevati vsa dela, ki jih je zavarovanec opravljal v Sloveniji in v tujini. Po sedaj veljavni invalidski zakonodaji je poudarek na delih in nalogah zavarovanca, ki jih je opravljal oziroma jih opravlja v Sloveniji, ne glede na to, kako oddaljeno je to obdobje. Predvsem na obmejnih področjih ima veliko zavarovancev delovno dobo tudi v tujini kar nedvomno lahko vpliva na odločitev o pravici. Z upoštevanjem vseh del, ki jih je zavarovanec opravljal, bi tako zagotovili tudi enotno obravnavanje vseh zavarovancev ne glede na zavarovalno podlago (delavec, kmet, samostojni podjetnik...).

Če se zavarovanec s pravico do poklicne rehabilitacije ne bi strinjal, bi izgubil status delovnega invalida in vse pravice iz invalidskega zavarovanja.

Z določenimi finančnimi stimulacijami na strani zavarovancev in tudi delodajalcev bi država spodbudila zaposlovanje invalidov. Tako bi se povečala tudi motivacija zavarovancev za poklicno rehabilitacijo. Glede na to, da bi se zmanjšal odliv sredstev, ki so po sedaj veljavni zakonodaji



namenjena pravicam III. kategorije invalidnosti, bi se lahko denarno nadomestilo zavarovancem za čas poklicne rehabilitacije odmerilo v višjem znesku. Z ustreznim sofinanciranjem poklicne rehabilitacije in prilagoditev delovnega okolja, dodatnimi davčnimi spodbudami in oprostitvami plačila prispevkov, pa bi institut poklicne rehabilitacije postal bolj zanimiv tudi za delodajalce.

Delodajalec, pri katerem je zavarovanec ob nastanku invalidnosti zaposlen, bi bil dolžan zagotoviti izvedbo poklicne rehabilitacije, če bi se v postopku ugotovilo, da je to izvedljivo. V nasprotnem primeru bi takega delodajalca doletela sankcija v obliki plačila denarne kazni.

Z ustanovitvijo več rehabilitacijskih centrov, bi se tudi postopki poklicne rehabilitacije poenostavili in skrajšali. Ocena zmožnosti in želja delovnega invalida, ki bi jih v postopku medicinske obravnave podal strokovni tim, bi predstavljali dober napotek za izbiro ustrezne oblike poklicne rehabilitacije določenega invalida.

V prihodnje bi bilo potrebno ob predhodni analizi in ocenitvi dejanskega stanja uskladiti tudi izvajanje poklicne in zaposlitvene rehabilitacije. Predvsem je to pomembno z vidika zagotavljanja enakih pravic vsem invalidom.

## 6. SKLEP

Glavni namen prispevka je v predstavitvi instituta poklicne rehabilitacije in sloni na definiciji, ki smo jo zastavili v raziskovalni nalogi, da je prilagoditev delovnega okolja izredno pomembna pri ohranjanju zaposlitve delovnega invalida in zaposlovanju invalidov na ustreznem delovnem mestu.

Optimalno delovno mesto oz. ustrežno delovno mesto razvija človekovo zavest in neguje njegovo sposobnosti ter vpliva na njegovo samopodobo. Ustrezna zaposlitev veča delovno storilnost delovnega invalida, mu vrača veselje do dela, izboljšuje oceno lastnega počutja, razpoloženja in tudi funkcioniranja, kar vpliva tudi na odnose v delovni organizaciji in družbi nasploh. Pomembno pa je, da delovno mesto prilagodimo invalidu in ne obratno; izhajati moramo iz potreb delovnega invalida in načrt prilagoditve delovnega mesta prilagodimo posamezniku.

Na podlagi analize dejanskega stanja in ugotovitev pridobljenih v raziskavi, lahko potrdimo, da sta postopek poklicne rehabilitacije in prilagoditev delovnega okolja izredno pomembna pri ohranjanju in zagotavljanju ustrezne zaposlitve delovnemu invalidu.

Vendar se v praksi, na tem področju, še ni veliko spremenilo, zato bo morala država v prihodnosti, razmisliti o dodatnih ukrepih, če želi okrepiti vlogo poklicne rehabilitacije. V ta namen je potrebno razmisliti o dodatnih finančnih spodbudah delodajalcem in zavarovancem, subvencijah, pa tudi o morebitnih sankcijah v primeru neupoštevanja predpisov. Smiselno bi bilo izvesti dodatne raziskave s pregledom in ocenitvijo stanja tako na področju poklicne kot tudi zaposlitvene rehabilitacije, primerjati uspešnost ustrezne zaposlitve (predvsem iz vidika zaposlitve za nedoločen čas), prednosti in slabosti obeh rehabilitacij in povzeti predloge za boljšo učinkovitost in usklajenost obeh sistemov.

Upošteva spremembe na trgu dela, vedno večjo starejšo populacijo prebivalstva, smernice tehnološkega razvoja in predvideno podaljševanje upokojitvene starosti, bo institut prilagoditve delovnega okolja (prilagoditve delovnih mest invalidom in starejšim, zagotavljanje ustreznih delovnih pogojev, prilagoditev delovnega časa...) pridobival vedno večjo veljavo za vse udeležence v delovnem procesu, ne samo za delovne invalide.

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## **Revitalisation of regional railway system**

Verlič Peter

Institute of Traffic and Transport Ljubljana, Slovenia

[peter.verlic@prometni-institut.si](mailto:peter.verlic@prometni-institut.si)

Jemenšek Blaž

Institute of Traffic and Transport Ljubljana, Slovenia

[blaz.jemensek@prometni-institut.si](mailto:blaz.jemensek@prometni-institut.si)

Temeljotov-Salaj Alenka

Oslo and Akershus University College of Applied Sciences, Norway

[alenka.temeljotov-salaj@ntnu.no](mailto:alenka.temeljotov-salaj@ntnu.no)

### **Abstract**

Revitalisation of regional railway system initiative is focused in region improvement and development of transport infrastructure and transport services. Railway investments are usually the costliest within the transport infrastructure, and especially in hard economic environment innovative and sustainable oriented projects are welcomed. From technical and sustainable point of view, it is a question how to define and to develop innovative, technical and technological advanced solutions and services in regional railway network with minimum investments in basic infrastructure and maximum added value towards advanced solutions for regional network. From the financial and social perspective, it is the matter of creating a framework, interesting for private and public side. In the research we are presenting a land value capture framework in plan strategy, by revenue models for PPP type of investments in urban city infrastructure. In this way project may contribute to urban development of degraded property.

**Keywords:** Railway; Revitalisation; Investment

## 1. Introduction

Regional railway network represents about 50 % of European railway network. It serves as a backbone of the European transport system. It is a segment that remains affected mostly by competition of road transport. This rail market segment is also one for which existing rail infrastructure right-of-way is not used according to its potential for supporting more sustainable land use and transport policies. These services are mostly operated under public service contracts and may share or not the infrastructure with mainline traffic. What is mostly at stake is making these services more attractive to customers, through increased reliability and speed and cutting costs, as well as an improved coordination with other public transport services and a better integration in regional mobility strategies. The key challenge is to define and to develop innovative, technical and technological advanced solutions and services in regional railway network with minimum investments in basic infrastructure and maximum added value towards advanced solutions for regional network. Revitalization of the network and services can bring benefits for the railway undertakings and regional rail transport operators and wider for the local economy (better transport connections enables economic activity) and on the other side to the society with more sustainable transport. Rail transport is at least twice more sustainable and environmentally friendly comparing to road transport (passenger transport) and at least 4-times more sustainable in freight transport, because of lower external effects to environment and society (van Essen et al., 2011). Stamos et al (2016) is focusing on the following actions of rail passenger transport in the future to shift to a more sustainable way of transportation: - The urgent steps towards the development of a strong rail profile in EU, - The basic prerequisites in development of public-private partnership for services and facilities provision, - High quality services to allow achieving coherence, complementarity and coordination among the different players in rail industry and wider public transport. . Railway reforms is very much in progress in many countries. The study made by Thompson and Kohon (2012) shows that US has examples of vertically integrated railroads and multiple access based on track age rights for freight and passenger services, and from the ownership perspective US have full private ownership of infrastructure. In EU it is not a case that private concessionaires build and own infrastructure. The first privatised public railway in EU according to Koppel (2006) is in Estonia. The bottleneck of EU transport industry was defined as: reduction of the share of rail transport on the transport market, insufficient competition, insufficient investments in infrastructure. The largest railway company in Estonia is a subject of the SMGS agreement. Koppel concluded that the effect of privatization was positive but due to unique opportunity it could be greater.

Japan railways are also operated by private companies and they are requested profitability by themselves. Study made by Morita et al (2014) says that there are in addition to privatization in Japan four types of congestion problems in the railways: the overcrowding of passengers on a train, the lack of capacity on a railway track, the overcrowding of passengers at a station and the traffic jam caused by a busy railway crossing. One of the recommended measures to solve the problem is recommendation to increasing the station capacity in accordance with urban development. They stated that as an approval condition of the urban development, the developer needs to contribute a portion of their profit from the development to improve public facilities (including not only railway facilities but also other public facilities). The method of the urban development should be approved in the case that it contributes to improve the capacity of public facilities (the developer pays Impact Fee).

Urban development was studied by Lari et al (2009) and Kemp et al (2013) who presented property owners and developers benefits from advantages in location accessibility. The different ways to measure value gains give rise to a range of different value capture policies. The most common policies implemented for owners are: Land-Value Taxes; Tax Increment Financing (TIF); Special Assessments; Transportation Utility Fees; and, Utilization of the property. Developers may be addressed by the following measures: Development Impact Fees; Joint Development; or Air Rights. Better community development can be an opportunity for railway investments. Estimating the spatial economic impacts of transport infrastructure is a long debated issue. The principal problem is identifying the 'anti monde', that is, the economic development that would have occurred without the

investment in infrastructure (Oosterhaven & Knaap, 2003). Some cases show the success of different economic models that may give indications of demand and supply effects. Metropolitan Transit Railway Cooperation of Hong Kong used a Development rights sale – R+P model (Rail Property) purchases development rights from the government at a ‘before rail price’, sells them ‘after rail price’. The development rights were used for building residential towers and shopping centre (Zhao at al. (2012). Portland- Streetcar (tramway) line was financed through a combination of traditional methods of funding (eg. government revenue and fares) as well as ‘alternative’ value capture mechanisms (bonds backed by revenue from increased short-term parking rates, TIF, and charges recovered from ‘special assessment’ districts). These value capture mechanisms comprised nearly three- quarters of the total funding required (Kemp at al., 2013). One of the possibility is proposed by Rye et al (2010) were focused on a research based on EU Framework project with a goal to create better integration of mobility management (MM) with land use planning. Mobility Management is a concept to promote sustainable transport and manage the demand for car use by changing travellers’ attitudes and behaviour.

Cornillie (2015) took under consideration Passenger Rail Investment and Improvement Act of 2008 (PRIIA), as a new tool to engage state and regional sponsors of intercity passenger rail service and to reexamine the form and function of long-distance routes (Amtrak). For short distance corridors and long-distance routes, they found that some of the created tools are positive in use, like: service sponsors variously own and maintain their own equipment; have supplemental agreements with host railroads; exercise substantial control over service scheduling, marketing, and customer relations. In these cases, Amtrak effectively serves as a wholesaler of intercity passenger rail services, providing its specialized resources to service sponsors that devise strategies for how best to serve specific markets. The development of mixed service delivery on the corridors mirrors efforts by many municipal governments in the US to provide public services via a blend of institutional and competitively procured services (Warner and Hefetz, 2008 by Cornillie, 2015).

The effects of introducing competition on a long distance international passenger route where there is also a strong domestic market served by high speed trains was studied by Johnson and Nash (2012). It was found that on-track competition has benefits to consumers, in terms of fares and services, but that it would reduce the profitability of the incumbent and that it would be difficult for the new entrant to attain profitability unless its costs were significantly lower than those of the incumbent. The proposed alternative of achieving the aim of cost reduction which does not have this disadvantage is through competition for the market by means of franchising.

## **2. Slovenian development possibilities**

Good road infrastructure and lack of efficient rail transport such as light rail or metro, leads to concentrating daily passengers travelling by cars to the bigger cities. Slovenian railways connect all the main destinations and regions around Slovenia and had the main connecting transportation role through the country history. The statistical data of its property dictate caution, long terms orientation and importance at both strategic and development plans and orientations of the land, settlement and infrastructure. Especially concerning the area around the main stations, as these are usually on the central locations of the cities. Peripheral and rural areas are usually less developed and neglected and new regional rail transport services can creates better environment for development. Users’ needs are usually less demanded in terms of quality (e.g. no high speed services are needed, distances are shorter between destinations). From the urban development, we can stress the possibility of investing in the area around main railway station, and as such the impact of new infrastructure that depends on the underlining economic conditions, the market local structure and on the outcome of a transport corridor connecting different regions. Policy measures with respect to Land value Capture addressing developers may be equally included in respective PPP agreements. In practice, land development and commercial use has been a “usual” “horizontal bundling” of economic and business development activities. A special focus should be given also to intelligent transport systems on regional lines as an

important part of railway network, serving as an interface between the main lines and end-users (final recipients of goods).

Slovenian Railways have a huge property portfolio, such as land and different types of buildings: stations, offices, storage and workshop buildings, abandon area, parking area etc. Together with the municipalities and other public and private investors the development in these areas can start, with the special focus on local community needs, sustainability development, social responsibilities and different touristic and business orientation.

Beside many of disciplinary deliberations and expert bases of future socio-spatial development in the modern market economy, the economy aspect of planned activities is very important. From spatial planning view, long term decisions of future investments should be taken into account, that's the reason that each stakeholder should answer on some basic questions: how high is the investment value of the interventions in space, when to expect its return rate, who has the largest advantage from it, what is the influence of the changes of future use, what will happen on the real estate market. For spatial development it is important to calculate the economic consequences of land use and economy of space especially from the view of spatial development optimization and its 'best use'.

Development of new concepts of methodological basis in future space interventions shows re-conceptualization of views on the meaning of regional infrastructure by encouraging the future regional/economic development. It is stated by Oplotnik at al. (2011) that decrease in the real income of the population quickly affect the legal economy by shrinking demand, which in turn result in falling revenue for the retail trade, in small enterprise bankruptcies, in a decrease in Gross Regional Product, and in a reduction in regional budget revenues. Deep cuts in public grants forces seeking for financial supports from the private sector.

With the development of PPP value capture models, it is easier for public and private side to integrate spatial planning and spatial economic approach, or approach that takes in consideration social and spatial trends, the ability of managing the development and spatial and environmental restrictions and challenges. Such imagined spatial infrastructure projects enable synergetic advantage on the level of individual and on the higher level of aggregates: local community, region and also national level. A private investor is interested only if the project is profitable. Lu at al. (2015) developed a nested logit model for checking the commuters' choice between different options, such as: subway-only mode, auto-only mode, and park-and-ride mode on a bottleneck-constrained corridor. They created a numerical model and presented an example to illustrate the pricing policies affect demand implementation, mode choice behaviour and benefits of private owners and the whole transportation system. In accordance with the sustainable developmental principals it is important to take into consideration the balance of economic, social and (spatially) environmental dimensions. From this perspective, we could stress some of the strengths of PPPs, as: easier financing of the project by PPP; reduction of risks using dynamic business-financial model between partners; using smaller capital scope of financial budget; creating new fiscal sources in more profitable projects; contributing new workplaces and developing economic infrastructure; dispersing funds to several projects at the same time; improving market efficiency by better linking costs and benefits of transportation improvements.

### **3. The general approach from methodological point of view**

The reasons to focus on regional lines in term of railway development are the following: - big potential (infrastructure already exists), - low density lines, - less developed and neglected areas, - less demanding in terms of user needs. The regional rail transport has a big growing potential since the infrastructure already exists and no huge investments are needed. Regional lines are low density and thus have an opportunity for growing; also there is an opportunity to use them to test and new technologies before implementation. One of the studies show that rail transit system has to have high levels of initial ridership, so it is essential that it is located along a corridor with high levels of existing demand (Higgins at al, 2014). And, it is often the potential for promoting transit-oriented land use



change that emerges as a central planning consideration for achieving long-term ridership goals. The rail transit should be understood not as a driver of new growth and land use change on its own, but as a singular element in a long-term effort to shape growth and revitalization in host cities. Higgins et al. (2014) found that the most frequently cited factors are: an increase in accessibility, regional growth and demand for development, and supportive public policies.

Peripheral and rural areas are usually less developed and neglected and new regional rail transport services can create better environment for development. Users' needs are usually less demanded in terms of quality (e.g. no high speed services are needed, distances are shorter between destinations). The effectiveness of the public connection is very important for the project success. Wirjodirdjo et al. (2014) extracted the simulations the variables that have the most significant impact in sustainability parameters\_ the number of railway stations, parking lot capacity in railway station area, the number of railway lane, the number of train's schedule departures and the number of train circuit. From the policy perspective Lee and Rivasplata (2001) stressed the importance that regional agencies be empowered to take the lead in both designing transportation planning strategies and in funding transportation projects to press metropolitan-scale transportation problems. Including authority leads to generate regional revenues for transportation enhancements and provide supplemental funding from the user fees. Olesen (2014) found that light rail is a generator for urban by supporting urban development - upgrading the public transport network and supporting urban development and regeneration. Olesen found the light rail as the 'backbone' of public transport and urban development in the sense of creating a new urban space in the city centre. He found a powerful decision making processes for the argumentation as redesigning the city, the struggle for space, the backbone of the public transport network and urban development, economical feasibility, the choice of technology, sustainability, and accessibility, what created powerful alliances between stakeholders.

A special focus should be given also to intelligent transport systems on regional lines as an important part of railway network, serving as an interface between the main lines and end- users (final recipients of goods). The revitalization project intends to increase growth in transport demand and customer expectations based on quality of service, with demonstrative implementation of smart technologies that can ultimately contribute to improving the reliability and responsiveness of customer service in rail transportation.

Improved new services can include:

- Improved signalling and safety devices (ERTMS regional)
- Sustainable transport and logistics services
- Innovative passenger services
- New generation of rail vehicles (intermodality)
- Integrated smart services model for regional railway network.

The European Railway Traffic Management System (ERTMS) is advanced solution that can be implemented on regional railway lines. ERTMS has two basic components (UNIFE, 2015). ETCS, the European Train Control System, is an automatic train protection system (ATP) to replace the existing national ATP-systems; GSM-R, a radio system for providing voice and data communication between the track and the train, based on standard GSM using frequencies specifically reserved for rail application with certain specific and advanced functions.

Advanced traffic management systems should be automated, interoperable and inter- connected. They should be combined with Driver Advisory Systems functionality to allow for predictive and dynamic traffic management, integrating and using real-time status and performance data from the network and from the train, using on-board train integrity solutions and network attached object control functions, supported by wireless network communication. Systems should be scalable and easily upgradable, using "plug-and-play" standardised products with standardised interfaces, and enabling easy migration from legacy systems. They should rely on harmonised train data and data calculation methods, using improved algorithms to reach normal operation following disturbances in the network.

The realization of projects of revitalization of regional railway lines should include from methodological point of view: - Analysis of current situation/ state of the art (intermodality, technical solutions – infrastructure, rail services, good practices); - Identification of main problems in terms of infrastructure and related services; - Identification of measures to be implemented on regional railway network; - Identification of financial model (PPP); - Identification and realization of pilots; - Project evaluation – measuring of project impacts (recurrent costs of rail operations, maintenance costs, reliability of operations); - Realization of investment.

For implementation of planned activities, the involvement of all relevant stakeholders is crucial in order to implement most valuable solutions. The most important stakeholders are Rail operators and infrastructure managers. In most of European countries the infrastructure managers are state-owned companies while the rail operators are either private companies or public, depends on level of liberalization of railway system in certain countries. Research institutions and universities are stakeholder that would bring knowledge for new solutions, e.g. studies, research, software development. Further the manufacturers of advanced technologies will develop tailored-made technology for regional railway network (ERTMS, signaling, new railway vehicles and other technology). Further involvement of regional authorities is crucial since they provides strategic plans and are also responsible for development of regions (regions/provinces, regional development agencies, municipalities, city authorities, etc.)

#### 4. Slovenian Case

Regional line Ljubljana- Grosuplje – Kocevje is single track, non electrified line and it is a part of the Ljubljana suburban region transport infrastructure network, see Prometni (sept. 2014). The line was constructed in 1893. The passenger services on the section Grosuplje – Kocevje was ceased in 1970. Recently, due to the heavy daily migration to the capital Ljubljana from this area and because of the road congestions, the government has decided to upgrade the section from Grosuplje – Kocevje and introduce the passenger railway services again. Start of the works began in 2008, until now the section Grosuplje – Ribnica was upgraded to axle load 22,5 t with average speed of 70 km/h. The line is non-electrified. At the moment there is no track side signaling installations and the section is closed for traffic. Level crossings are automatic and autonomous triggered by trains and controlled by trackside signals.

The line will be 100% covered by GSM-R network, the network will be full in operation in 2016. Section Ljubljana – Grosuplje is equipped with auto stop devices and the stations are equipped with electrical relay or old mechanical interlocking. Traffic operations are manually handled between the stations. On the section Ljubljana- Grosuplje currently operates 35 passenger and 6 freight trains per day. Average speed of the line is 70 km/h, allowed axle load is 20 t. Section Grosuplje – Ribnica has been upgraded but with no trackside installation and suits as a perfect greenfield pilot project for different on-site testing of different ERTMS onboard and track side installations. UIC working group has listed the line as one of a possible on-site testing facility for the ERTMS regional, see fig 1.

Table 1: Current ERTMS activities in Slovenia, see Prometni (2014)

ACTIVITIES							
ETCS L1 trackside installation on corridor D							
GSM-R trackside installation on all network			Cut over				
			GSM-R on board equipment				
			ETCS on board equipment for 32 locomotives				
2013	2014	2015	2016	2017	2018	.....	2024



Table 2: Long term ERTMS activities in Slovenia, see Prometni (2014)

ACTIVITIES						
			ETCS Regional-pilot on track section Ljubljana-Grosuplje-Kočevje			
			ETCS (L2) on other main tracks			
			ETCS regional on other regional tracks			
			Upgrade ETCS (L1) on corridor D with ETCS (L2)			
			Implementation of ETCS on board equipment to the rest part of rolling stocks			
2014	2015	2016	2017	2018	.....	2024

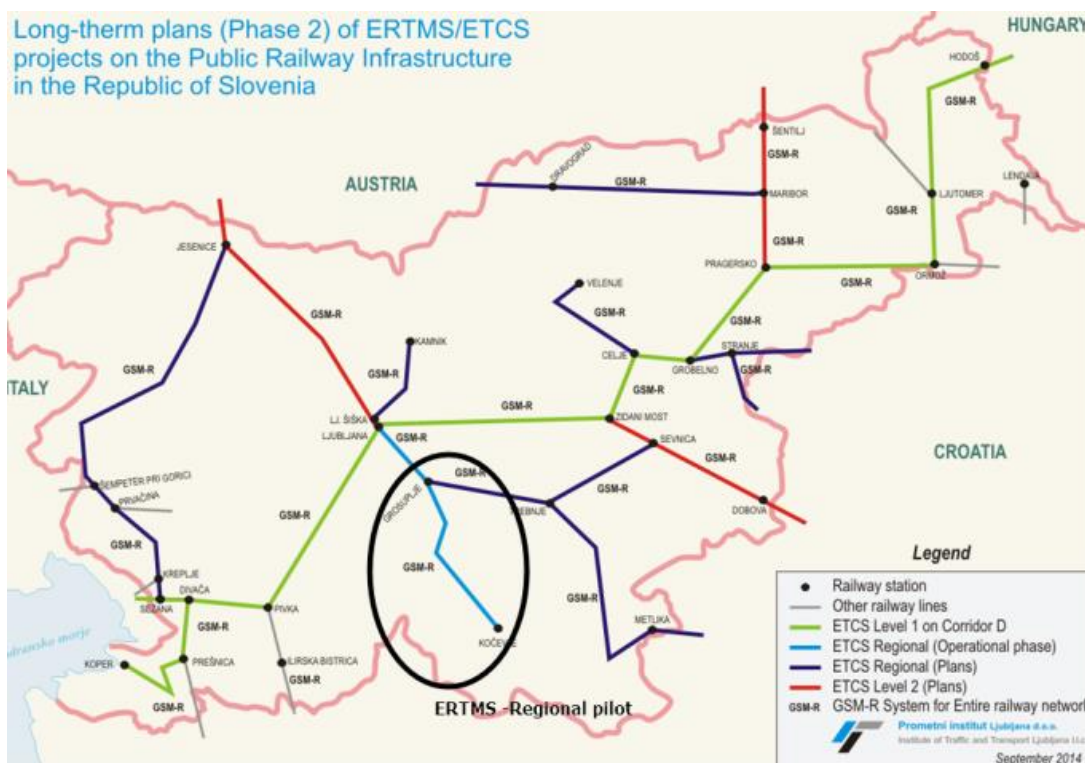


Fig. 1: Plan of ERTMS deployment in Slovenia, see Prometni (2014)

The project is interesting also for private capital. The manufacturer and provider of ERTMS technology can invest into ERTMS regional system operated by railway infrastructure manager (lease and other PPP options).

Since regional lines have a big growing potential the model is suitable also for passenger services and for different ticketing solutions. Besides the advanced traffic management system also other measures are relevant for revitalization model. Reconstruction of rail stations (in our case Grosuplje station) is another systematic part of revitalization of regional railway system and include reconstruction of unused and neglected station area with areas that enable transport integration, such as implementation of park and ride system (P+R) as an intermodal point for rail transport integration with personal car use (fig. 2), and further modernizing storage areas for freight operations and building complementary business/commercial premises.



Fig. 2: Plan for P+R area at Grosuplje railways station, see Di Batista and Zgonc (2015)

## 5. Conclusion

Based on the literature review, analysis of Slovenian development possibilities and real Case study, we can emphasize that revitalization of regional railway network and services can bring several positive effects. The most important are listed below: - Integration of low costs systems (innovative measures with low minimum investments) - Better quality of rail transport services - Better connection of regions and sub-regions - Revitalization and development of rural, neglected and less developed area - Strengthening international cooperation (cross-border regions)

Sustainable effects represent increase of public passenger transport that would consequently reduce congestion on roads and would make more environmentally-friendly transport avoiding external effects of transport.

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## Urban Planning Typology and Property Development Planning

Ivan Stanič

Nova University, European faculty of Law, Slovenia

E-mail: [ivan.stanic@ljubljana.si](mailto:ivan.stanic@ljubljana.si)

### Abstract

Urban planning typologies, as proscribed in regulatory planning documents, have direct impacts on the capacity of a given property to generate revenue. Firstly conditioned by stipulated land use and secondly by quantitative planning conditions, which are both significant elements of adopted planning legislature, typology provides the three-dimensional asymptote of development possibilities of a given plot of land. In democratic societies planning legislature is adopted by responsible representative decision-making bodies. Therefore, the legal code, which is simultaneously a technical guideline, is in essence also a political document since it temporarily or permanently allows or disallows capital gains from a given property. It is also a vehicle for increase or decrease of value of neighbouring properties.

The article deals with issues that are qualified by methods and procedures inherent to urban design, urban planning, architecture and engineering. These include rules for plotting and replotting, proscription of floor space index, built-up index, heights, backdrops and other classical tools of urban design. They also include acceptable tolerances for spaces, since many firmly proscribed planning conditions are often challenged in further procedures. The argument also deals with necessary preliminary steps that have to be taken before a decision is made, the decision being a new legally binding condition.

In conclusion the essential step that can qualify or disqualify a speculative legal provision is discussed, namely the proper and timely obtainment of knowledge, seen as provision of evidence, various supporting knowledge, mainly concerning costs of infrastructure and the definition of payees, as well as anticipation of appeals, that can overturn even generally beneficial political decisions.

### Key words:

Urban planning typology, Planning regulation, Property rights, Public interest

## **1. Introduction – Urban planning typology**

Planning typology is a set of agreed concepts concerning the built environment, which are applied to all material aspects of the built environment. The underlying assumption for the article is that physical planning and adoption of regulatory measures are seen as the necessary vehicle for delivering public interest in a given society. Thus also the legal framework in the given society is set up to accommodate the activity.

Planning typology can be applied to various purposes, e.g. property tax, calculation of present and potential values of a property, where the site or location theory is applied, maintenance of inherited values such as density, heights, landscaping, cultural heritage, availability and capacity of the traffic and utilities infrastructure, availability and/or proximity of social services, such as schools, kindergartens, health services etc., as well as access and availability of public transport or other features of sustainable mobility. In the strict sense of property development, they can also imply the level of publicly recognised attainable gains from investment on a given place and thus condition interest for given properties or upscale or downscale entrepreneurial ambitions.

In the general and particular all the themes have to be met by planning regulations. These are legally binding documents, generally adopted by proscribed democratic procedure by decision-making representative political bodies. The necessary inclusion of technical features and measures is a translation of prevalent values in a society into the sphere of the physical or material. For example a typical document of this type, i.e. a land use plan or spatial plan, of course doesn't cover all aspects of spatial uses and indeed shouldn't even attempt to bring aboard features that are particular, contestable, conflicting or temporary. These should be dealt with in detailed plans, which also have to undergo democratic adoption procedures.

## **2. Urban planning, regulation and property development**

Urban planning typologies, as proscribed in regulatory planning documents, have direct impacts on the capacity of a given property to generate revenue. Firstly conditioned by stipulated land use and secondly by quantitative planning conditions, which are both significant elements of adopted planning legislature, typology provides the three-dimensional asymptote of development possibilities of a given plot of land. In democratic societies planning legislature is adopted by responsible representative decision-making bodies.

### **2.1 Land use**

Land use is the generally accepted planning category, which is seen as a public interest, whereby the use of land is stipulated and regulated, concerning placement of programmes and functions, ensuring mutual functioning of neighbouring functions, maintaining suitable use of available or planned public infrastructure and other conditions as seen fit by the decision-making body and supporting professional and management structures.

A common set of land use, generally includes the following types of land use: agriculture and forests, built-up areas, waters and river courses, as well as land designated to various types of infrastructure, which can be exclusive or dedicated to a certain service or set with a regime of use, meaning that the use of the particular land is conditioned by the demands of the service. Land use can be developed further and elaborated, especially for built-up areas, for example: housing, central functions, production and industry, green areas, sports and recreation areas, education, health care, transport and mobility, tourism etc., meaning any specific need relating to the economic, cultural or physical aspects of a given space or place.

## 2.2 Qualitative and quantitative asymptotes – Building type and property development

The value set, generally accepted as contextual for a given place or society has to be translated into physical terms to be applicable for regulatory purposes. They imply safeguarding of attained values (i.e. preservation of identity), improvements in the utility of a specific place (i.e. smaller redefinitions of use, image or level of services) or complete changes to the physical setup of a given place (i.e. production of a new space in place of the former).

Selection for safeguarding of a place or changes to the place can be decided upon from a set of criteria, such as:

- City's morphological model,
- Spatial organisation of the neighbourhood and immediate and wider urban surroundings,
- Permissible building densities, FSI and BI + size and shape of plots,
- Urban design of the area and surroundings – design of suitable urban spaces,
- Building typology, architecture,
- Orientation of buildings and homes,
- Relations to the immediate surroundings (parking, courtyards and gardens, green surfaces, pedestrian areas etc.)
- Economic efficiency of the scheme,
- Possibility of building in phases,
- Possibility to obtain the land.

Selection can be driven by axiomatic inputs from various fields of public interest, whereby regulatory asymptotes are defined as measures to alleviate a potential hazard, reinforce a prevalent societal value and/or achieve environmental or other objectives that are most often set in specific policies. On the one hand they are derived from various evidences of physical realities and on the other from policies that are set up to meet specific strategic goals, such as:

- Hazards:
  - Floods
  - Land carrying capacity (geology and geomechanics)
  - Earthquakes
- Prevalant societal values:
  - Cultural heritage
  - Natural heritage
  - Particular features (identity, sense of space, inherited accepted values and spatial features)
- Environmental aspects:
  - Environmental capacity (vulnerability)
  - Water reserves and safeguarding
  - Waste management
  - Waste water disposal and treatment
  - Infrastructure (routes, capacity, quality) – maintenance costs and environmental impacts

On the level of real development, evaluation of costs can also be the rationale supporting decisions on typology, such as:

- Cost of land (extant, potential – location theory)
- Estimate of costs of planned changes
- Estimated cost of improvements to the utilities and transport infrastructure and other services and delegation of costs, etc.



Translation of building typology and obtained knowledge into physical terms can be seen in quantitative urban planning criteria, which can be used for various calculations, needed to legitimise choices concerning property development, but they also directly impact the choice of building typology:

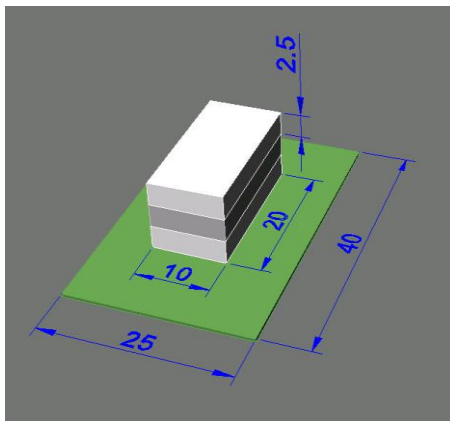
### Quantitative urban planning criteria: factors and indexes

$$\text{Floor space index (FSI)} = \frac{20 \times 10 \times 3}{25 \times 40} = 0.6$$

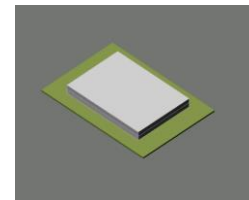
$$\text{Building index (BI)} = \frac{20 \times 10}{25 \times 40} = 0.2$$

$$\text{Volume (V)} = \frac{20 \times 10 \times 3 \times 2.5}{25 \times 40} = 1.5$$

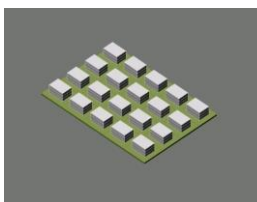
$$\text{Density (D)} = \text{number of people/ha and/or homes/ha}$$



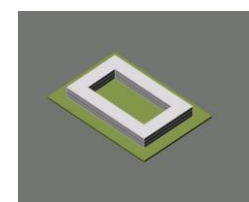
1 floor, BI = 1, FSI = 1



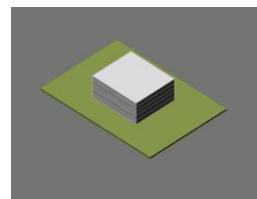
2 floors, BI = 0.5, FSI = 1



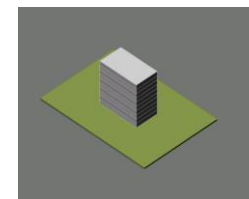
3 floors, BI = 0.33, FSI = 1



3 floors, BI = 0.33, FSI = 1



5 floors, BI = 0.2, FSI = 1



10 floors, BI = 0.1, FSI = 1

## 3. Societal interface of urban planning and regulation

To preserve property values and achieve economy and efficiency in the structure and arrangement of the city, policy makers perceived a need to sort out incompatible activities, set some limits upon building size, and protect established areas from despoilment

### 3.1 Public interest and decision making

Public benefit is the satisfaction of public interest, whereby public interest is represented by publicly safeguarded goods, as such stipulated by the legal system. They are: public order, public safety, immediate dangers to life and health or property and interests of the economy. Ensuring immediate safety in spatial planning, management and development implies the anticipation of risks and practical aspects tied to interventions in space, as well as mutual effects of the space on objects and vice versa. Adequate response in spatial planning requires adequate knowledge of risks. These emerge from the natural and man-made condition – the physical realities and the cultural-organisational framework. Both can be anticipated to various degrees of certainty and adequate responses thought out.

### 3.2 Definition of property rights

The adoption of general principles or regulation on properties directly influences the capacity of a given property to generate revenue. When these represent physically encoded societal values, the relation between public intervention on private property becomes even more important.

However, the right to property is recognised in Article 17 of the [Universal Declaration of Human Rights](#) but is not recognised in the [International Covenant on Civil and Political Rights](#) or the [International Covenant on Economic, Social and Cultural Rights](#). The [European Convention on Human Rights](#), in [Protocol 1, article 1](#) acknowledges a right for natural and legal persons to "peaceful enjoyment of his possessions", subject to the "general interest or to secure the payment of taxes".

The right to property is one of the most controversial human rights, both in terms of its existence and interpretation. The controversy about the definition of the right meant that it was not included in the [International Covenant on Civil and Political Rights](#) or the [International Covenant on Economic, Social and Cultural Rights](#).<sup>[3]</sup> Controversy centres upon who is deemed to have property rights protected (e.g. human beings or also corporations), the type of property which is protected (property used for the purpose of consumption or production), and the reasons for which property can be restricted (for instance, for regulations, taxation or nationalisation in the public interest). In all human rights instruments, either implicit or express restrictions exist on the extent to which property is protected.

Article 17 of the [Universal Declaration of Human Rights](#) (UDHR) enshrines the right to property as follows: »Everyone has the right to own property alone as well as in association with others« and furthermore »No one shall be arbitrarily deprived of his property«.

After failed attempts to include the right to protection of property in the [European Convention on Human Rights](#) (ECHR) European states enshrined the right to protection of property in Article 1 of Protocol I to the ECHR as the "right to peaceful enjoyment of possessions", where the right to protection of property is defined as: »Every natural or legal person is entitled to the peaceful enjoyment of his possessions. No one shall be deprived of his possessions except in the public interest and subject to the conditions provided for by law and by the general principles of international law« and furthermore »The preceding provisions shall not, however, in any way impair the right of a State to enforce such laws as it deems necessary to control the use of property in accordance with the general interest or to secure the payment of taxes or other contributions or penalties«. Therefore, European human rights law recognises the right to peaceful enjoyment of property, makes deprivation of possessions subject to certain conditions, and recognises that States can balance the right to peaceful possession of property against the public interest. The European Court of Human Rights has held that the right to property is not absolute and states have a wide degree of discretion to limit the rights.

The stated legitimises the advantage given to the public domain across the territory of the European Union, but also doesn't fully legitimise unadvocated or speculatively regulated contents in planning documents, adopted in parliamentary and/or democratic procedure.

#### **4. Conclusion –Guarantees and risk diminishment**

Spatial management, urbanistic planning and regulation can in the general and particular sense be seen as activities in the public interest, which are manifested in the social and physical sense. Besides the aesthetic component, seen as urban design, new contents are gaining in relevance, such as social justice and resilience (Habitat III, Declaration of Quito, 2016).

In sum, the variety of types of projects on which planners work, the lack of consensus over processes and goals, and the varying approaches taken in different cities and countries have produced great variation within contemporary urban planning. However and whatever the societal setup even these have to stipulated in legal documents, whether in a qualitative criteria toolbox and/or a quantitative measurable one.

Regulation as such implies the setting up of a legal framework, which stipulates conditions for physical interventions in space, in this article described through urban planning typology. When



implied on the concrete, practical level, eg. in property development, this means limiting the scope of possible activities on the property or the statutory permission for development of the property, which can be accepted from the aspect of public interest. Planning regulation can ensure higher benefits and diminish risks if adequate spatial evidence is gathered beforehand and included in early planning stages.

Urbanistic regulation directly affects property rights or the reaping of fruits from property. The adequacy or correctness of decisions taken politically at different levels and different scales of accuracy should be measurable and the decision-makers held accountable.

Expert evidence and ensuing regulation shouldn't be seen as a hindrance to development or economic gain, but as the basis for diminishing risks for investment and simultaneously the safeguarding of natural resources and their sustainable use, which can be seen as the most important contemporary societal goal.

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